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The purpose of this study was to review current developments in team teaching and to assess its potential in the Calgary, Alberta, schools. An investigation into team teaching situations in schools in the eastern half of the United States and Canada revealed characteristics common to successful programs (e.g., charismatic leadership and innovative teachers) and several approaches to team teaching--horizontal and vertical teams, teams composed of a master teacher and interns, and independent study programs. Floor plans of selected schools were obtained. Conclusions drawn from the investigation are that team teaching has much to offer the Calgary schools, that teachers should be carefully prepared for team teaching, that an incorrect conception of what team teaching is can damage a program, and that buildings must be designed to provide flexible scheduling. (Appendices include a lengthy bibliography, a discussion of what behavioral sciences can suggest about the selection of personnel for team teaching, and statements of team teaching philosophies from St. Michael School, Calgary, and Abington (Pennsylvania) High School.) (JS)

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DOME PETROLEUM TEACHING FELLOWSHIP
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I also wish to express my appreciation to Dome Petroleum Limited for affording me a unique educational experience.

— L. W. Bunyan.

November, 1965.

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# CHAPTER 1

## THE PURPOSE OF THE STUDY

During the past 50 years, most professions have undergone significant changes, often of a drastic nature, in order to meet the demands of a rapidly changing world. Education, on the other hand, has accepted change reluctantly and has particularly resisted any break with traditional values and techniques. It is only within the last eight years that education has reassessed the role it must play and has started to seek innovations that will help it to keep pace with the other professions.

The purpose of this study was to review the current development of a specific innovation in education, team teaching, and to report on my findings and assess the potential value of team teaching in the Calgary schools.

I decided to limit my investigation to the eastern United States and Canada and rely heavily on the advice of Dr. L. W. Downey, Dr. John Fritz and Dr. J. Cheal of the University of Alberta, Dr. John Guy Fowlkes, University of Wisconsin, Dr. Luvern L. Cunningham, University of Chicago and Dr. J. Lloyd Trump, National Association of Secondary-School Principals, Washington, D.C. These men have been intimately associated with the team teaching technique since its introduction in the United States. It was also agreed that the Toronto schools should be investigated as most of the Canadian literature on this subject originated there.

Team teaching is merely one of many educational innovations currently being evaluated in North America but, by its very nature, it provides an opportunity to break away from traditional classroom structures and give the teacher a more stimulating and professional role.

Team teaching does this by giving a teacher flexibility in planning, implementing and evaluating courses of instruction co-operatively. It means that he will teach in association with his fellow teachers and will be subjected to the inspiration and team discipline that this association will provide. It also means that the students will learn in the most suitable environment whether it be large group instruction, small group discussion or independent study.

The initial value of this technique seems to be for the teacher, who has an opportunity to develop rapidly in the highly professional atmosphere provided by teaming. The value to the students follows as they are taught on an increasingly professional level by teachers who are more able to concentrate on their individual teaching strengths within the team.

Team teaching operates best within a school containing flexible accommodations ranging from large lecture areas to small seminar rooms. However, it can operate within traditional school designs and this is being done in Calgary at the present time.

I believe that team teaching offers such advantages that it deserves full evaluation by the Calgary School Boards. I recommend that model team schools be established at all grade levels from elementary to high school. Only in this way can the technique be evaluated under various conditions, in different subject areas and at all grade levels. I also recommend that each experiment be a full and courageous program and submit that halfway measures would only prove team teaching useless.

# CHAPTER 2

## DEFINITION OF SOME TERMS

The following are the definitions of some terms as used in this report:

### Bureaucracy

I use this term to refer to the necessary structure that is employed by educators and public officials to ensure the stability of public education.

### Professionalism

This term is used to refer to the independent activity of an educator — either teacher or administrator — in implementing, adopting, inventing or researching new or better ways of teaching and learning at the individual school or classroom level.

### Inertia

I have adopted this term to symbolize the resistance that bureaucracy has for professional activity within the individual school or classroom.

### Team Teaching

A simple definition of team teaching that I once held is that "two or more teachers co-operate to teach a number of students in one or more subject areas in the curriculum". Reference should also be made to Dr. Trump's definition in Chapter 4. In my opinion, Dr. Trump's definition is much more meaningful and realistic; however, the more simple definition will serve at this time.

### Open Climate School

The following definition is from "Organizational Climate and Leader Behaviour" by W. G. Schmidt in the C S A BULLETIN, Volume IV, (5), July, 1965, page 54. "The open climate is characteristic of an organization in which goals are achieved. Leadership acts emerge easily and appropriately. The satisfaction of the individual's needs is derived from social interaction and job accomplishment".

### Controlled or Closed Climate School

The following definition is from the same source. "The controlled climate is mainly concerned with getting the job done. Little attention is given to satisfying the social needs of the staff in the controlled climate . . . Principals of such schools are exerting pressure for productive output."

### Charisma

I understand this term to be the quality possessed by an individual who is able to bring about changes or stability based largely upon his or her personality. Sociologists and political scientists are concerned with what happens to an organization that runs largely on the thrust of one charismatic individual when that individual is no longer visible to the organization.

### Horizontal Teams

This term refers to teams of teachers in the same subject area, that is, a team of three English teachers.

### Vertical Teams

This term refers to teams of teachers in different but related subjects, such as a team of physics, mathematics and chemistry teachers or a team of English, history and literature teachers.

# CHAPTER 3

# WHY TEAM TEACHING?

With the advent of Sputnik in 1957, educators in the United States began to give serious thought to the traditional role and structure of their schools. Team teaching has been one of the more significant innovations resulting from this concern and almost one-fifth of American schools have reported experiments with team teaching in one form or another.

Just what is it that the Americans are experimenting with and why? Generally, team teaching proposes to restructure the traditional school and classroom organization in an attempt to find a new framework that would give better and more immediate attention to pupil and teacher individual differences — both strengths and weaknesses. A more open and flexible school would allow individual teacher abilities to be applied to the student or students at more appropriate times and places within the school building and time table. These times and places will vary according to the individual teacher's decisions and this decentralizes the authority for these decisions from the system level to the professional level of the teacher.

Also, in terms of human energy, the amount of teacher energy wasted through the repetition of lectures from class to class is considerable. A real saving would be gained if all teachers delivered a highly motivated and motivating lesson to all of their students at once.

In addition, it would be valuable if small groups of students, five to fifteen in number, got together, under a more passive supervision than a lecture room affords, for times when student and teacher dialogue is required.

Lastly, it would be ideal if students took more individual responsibility for some parts of their education by doing independent research and study during the school day in a resource area within the school.

The investigation and experiment that I have carried out lead me to believe that several ultimate problems may develop.

The activities of a team school require a very flexible staff, schedule, administration and building. With this comes a need to live with confusions that will necessitate the preparation of new internal organizations or structures on very short notice — not just once a year.

As professional decisions are made from time to time by organized teams of teachers, the resulting confusion potential must be minimized by technological devices, flexible teaching areas, non-professional aides and team co-operation. One example of each might be an overhead projector, multi-purpose rooms, commercial artists and secretaries, and a healthy teaching team.

Is all of this possible? Yes, it is possible with dedicated professional staff and extra sums of money. Americans often have extra monies from such agencies as the National Defence Education Act, the Ford Foundation, Educational Facilities Laboratories, to name only a few of the federal and private agencies.

Is it practical? I would hesitate to say that it is so long as the present role of the teacher in a bureaucratic system is maintained. Furthermore, there is no clearly visible crisis that would suggest to most teachers that a more professional role is necessary. Confusion hurts, and the "system" and the "society" attempt to alleviate it. Sociologists suggest that the very secret to superior education might be a changed role of the teacher, one in which the teacher lives with confusion in an organized fashion and in which the teacher's performance is clearly visible to all other colleagues. (See Addendum A). Dr. D. Lortie, Chicago sociologist, told me he is convinced that the greatest asset of the team teaching technique is the visibility of the teacher to his or her peers. But as teachers and administrators are not trained to this way of working, they are often unable to cope with the new life and seek to structure their work back into a more traditional setting. Moreover, the truly professional life might disrupt the private social life of the teacher to such an extent that conflict arises.

Is it possible to change the role of the average Canadian or American educator? I believe it is possible by training the new teachers through team internships such as those found at the University of Wisconsin for graduate students and those developed by the National Education Association for Ph.D. candidates in administration.

Teachers could be trained to highly professional tasks with the non-professional tasks left to aides. The professional would have to cope with independent decisions that result in some degree of confusion. This would necessitate further decisions within primary associations at the school. Dr. J. Lloyd Trump, of N.A.S.S.P. believes that experienced and traditional teachers can be retrained if it is carefully done and I have seen some evidence of this within my own school.

Is it possible to find enough professionally inclined persons who would become primarily involved in the schools and classrooms of the future — persons who would devote themselves to total war on ignorance, including their own? This is surely the real problem. It would take a supreme national effort and crisis in any country to find, motivate and train the team teachers necessary to staff all our schools. And, can we find sufficient educational leaders with the charisma necessary to carry through the required changes?

These are questions that need firm answers from those responsible for the continuing education of the nation's youth and the spending of public funds.

The question at this point in time must be whether team teaching is an innovation that is going to be accepted in the United States. Initially, team teaching has had some experimentation in Canada but no Canadian school system has set out to convert to team buildings, train new kinds of staff or find the extra money that might be neccessary. This is reasonable because there seems to be no rush to accept team teaching in the United States; they are still experimenting as well.

Furthermore, Matthew B. Miles, in his book "Innovation in Education"* contends that the only real educational system is national and that the local systems are in fact myths. Miles, therefore, suggests that innovations of a national nature must be watched closely for possible adoption into local systems. If an innovation is being studied nationally and is showing significant worth, the local systems should be preparing themselves for its adoption. I believe that most educational innovations accepted in the United States are either now accepted in Canada or on their way to being accepted. Examples of these are modern mathematics, educational television, junior colleges, language laboratories and structural grammar.

My junior high school has been totally involved in team teaching for the last two years. The school building is traditional in style as are the staff's training and the school system. No extra money, staff nor aides have been placed in the school for the experiment and yet it has been carried off with a fair measure of success. Now in its third year of experiment, the school has very few of the traditional classroom and teacher characteristics left. How is it possible to effect such a change in the light of what has been said in the earlier part of this chapter?

The staff of St. Michael School is totally committed to the experiment and they have tried to carry out most of the techniques recommended by team schools reporting in the literature and recommended by my observations of team schools. The classroom image of one teacher, room and desk with 25 to 35 students has disappeared and the responsibilities of the teacher redefined. It works.

As there is excellent rapport and enthusiasm among the teachers and the students at this time, there is a nagging doubt in the back of my mind as to whether or not this technique could survive if the school did not have notoriety and the experiment have constant impetus supplied by two or three enthusiastic administrators and teachers.

In the remaining chapters, I intend to define team teaching more thoroughly, describe how some schools operate under it, describe the types of buildings and staff that would be desirable and describe some pitfalls that do exist.

* Bureau of Publications, Teachers College, Columbia University, New York (1964).

# CHAPTER 4

# WHAT IS TEAM TEACHING?

In my opinion, Dr. J. Lloyd Trump defines team teaching best in his article, "What is Team Teaching", in the February, 1965, edition of Education. I now believe that those interested in team teaching should read and discuss this article and then visit several of the team schools listed in Addendum B. Each of the team schools has evolved differently but upon close observation a visitor will see most of the characteristics of team schools mentioned by Dr. Trump.

Dr. Trump begins his definition:

> I prefer a relatively broad definition of team teaching. The term might apply to an arrangement whereby two or more teachers and their aides, in order to take advantage of their respective competencies, plan, instruct and evaluate, in one or more subject areas, a group of elementary or secondary students equivalent in size to two or more conventional classes, making use of a variety of technical aids to teaching and learning in large-group instruction, small-group discussion and independent study.

Dr. Trump emphasizes the co-operative involvements of the team members. I have noticed the benefits of such primary involvements and what they may do to staff. If the team co-operates in publishing its philosophies, aims, teaching methods, student groupings and use of technologies and then commits itself in writing for the rest of the staff and visitors to read, the publication commits the team to a better performance. An excellent example of this can be seen in North Campus High School in Abington, Penn. Dr. Allan Glatthorn and his staff have committed themselves by teams and the visitor may get copies of these as shown in Addendum C. Other schools do something similar to this. However, the St. Michael staff was able to adapt the Abington format with more ease than some of the others. One of the St. Michael teams agreed after they had completed their commitment that it gave them a clearer perspective for their future activities this fall.

Dr. Trump expands his article about team teaching by pointing out the needs for teacher aides, technological aids, instructional reorganization, flexible scheduling, a different approach to teaching roles and a difference in spending habits. These points are discussed later on in this paper.

Dr. Trump further defines teaming by stating what it is not:

> Team teaching does not mean . . . three teachers and 90 students who occasionally come together for a presentation to the total group and then return to their respective classes of 30. This simple variation of class size is not likely to produce any more gains for teacher or pupils that the hundreds of class-size studies conducted in this country and in others for many years.

Dr. Trump's point is that substituting a pseudo-team teaching structure for a traditional structure will not produce any significant gains for teachers and students. From what I've observed in Alberta, team teaching is badly misinterpreted. Often as not, they come up with something that might better be called a non-graded technique or just better staff utilization. The big risk here is that team teaching will be blamed for whatever failures may occur in these misdirected, and certainly misnamed, experiments.

The team teachers must be sufficiently wise and dedicated to examine their student population and decide themselves how best to organize a flexible teaching and learning environment to get the best out of each individual, both student and teacher. The team must have enough control of their own environment that they may vary the time element at will, not just on a yearly or semester basis.

This is not to say that teachers would be allowed to ignore the Provincial requirements or the requirements of institutions of higher learning. It is only to say that the flexibility of the teams would allow them to rescue the remedial student now and for as long as necessary and that the team would be able to place the fast learners into environments where they can study in depth.

Recently at St. Michael School, I saw a grade nine mathematics remedial class of 8 students operating well with one team member, while the remainder of the class took an examination under a practice teacher who had designed the examination and the other team member prepared future lessons at his desk in the teachers' office.

The same day, I conducted a literature class for a few grade nine students who had missed an important introductory lesson to seminar work. My team partner attended another class to observe a practice teacher. The remainder of the grade nine literature class attended seminars in groups of 4 or 5, guided by a relieving teacher and seminar discussion sheets. The seminar students returned to the main classroom after discussion and attempted to reach some conclusions under my guidance. Before the class was over, two students were at the front of the room directing the class discussion in a lively fashion while I was sitting at the back, silent and out of the picture.

The point here is that the teams had decided to carry on in these fashions for limited periods of time. Visitors could not come in on any given day and expect to see the same kind of structure or pattern of class size and activity. A truly flexible school allows the structure to vary right in the middle of a class period if the team members agree at that moment that it seems necessary.

Dr. Trump points out in his article the long term, structure-defeating aspect of team teaching when he says:

> Moreover, team teaching does not mean merely changing standard-size classes of 30 each to classes of 120, 15, and independent study without changing what teachers and students do. What teachers today call "class discussion" is inappropriate for large groups. Similarly, their typical lectures given to small classes are inadequate. A small group session is largely wasted if teachers continue to conduct oral quizzes or lecture. Independent study involves more for students than conventional homework or merely reading books and filling in blanks.

Dr. Trump has placed his pen on a sore spot that I have felt for many years. Too many teachers use oral question and answer methods in an attempt to develop an heuristic stimulus for class investigation. I have often felt that the teacher was only talking with a few students at any given time. In seminar groups, a teacher who uses sensible group dynamic techniques, can stimulate a small group of students to become involved in an exciting academic pursuit of knowledge. In these sessions, the teacher's role is largely passive, but during my investigation of team schools, I saw many instances where the teacher was not aware of his or her peculiar role in seminars. Either they became afraid that the group was not getting to the point quickly enough and began to teach actively, or they allowed the group to wander about in a verbal "idiot behaviour". These latter students were making unrelated statements without any real understanding of their task or aims. At St. Michael School, students in English seminars use guide sheets as shown in Addendum D while evaluating an essay or essays. This has worked well and an attempt is being made to develop seminar sheets for other aspects of English as well as other subjects.

Seminar groups at Ridgewood, Abington, Nova and Easton Schools were particularly stimulating to watch because the teachers had enough selfcontrol and confidence to be passive in their role. This is difficult for teachers not trained for seminar work or for teachers who do not see themselves in this role at all.

Dr. Trump goes on to say:

> Team teaching is not per se an effort to solve the teacher shortage problem except as it identifies more stimulating and professional roles. It is not a fad to be engaged in simply because others are doing it or as a temporary expedient to solve a building shortage or financial problems because a referendum did not pass.
>
> Some schools and school systems need something to "hold the line" while there is a temporary teacher shortage or while a building program is late. Many persons express interest in team teaching when they find that they are to be crowded into a gymnasium for a winter or they are unable to get the class loads down below 50. Team teaching will do little for such people because they only see the large group aspect, and that definitely is NOT team teaching.

Dr. Trump concludes his article with several statements that further define what a team school should do:

> Team teaching, like other innovations, past and present, succeeds only to the extent that conditions such as the following are met:
>
> 1. The broad implications of the change are met.
> 2. Teachers are re-educated on the job prior to and during the change.
> 3. Evaluation changes proceed along with the innovation.
> 4. Shortcomings are remedied as soon as they are discovered.
> 5. Appropriate facilities are obtained.
> 6. The financial implications are considered so that new procedures are reasonable in their demands for added expenditures.
> 7. Adequate, honest, easily understood information about the changes is provided to lay and professional groups.

From my point of view, a brief elaboration of each of Dr. Trump's statements would be as follows:

**1. "The broad implications of the change are met."**

Teachers and administrators must read as much of the "team" literature as possible. Any opportunity to visit team schools should be taken and school boards should consider sending a few adaptable professionals abroad to visit. I saw a few examples of timid beginnings in schools where a small number of the staff were organized to team. The remainder of the staff then took on a variety of attitudes ranging from hostility to amusement toward the team group. This is also true of areas where a team school is starting. The surrounding schools must also take part in the experiment even if it is only in an evaluative capacity; otherwise, hostility in one form or another can be created according to the degree of threat that the team school poses for the traditional one.

**2. "Teachers are re-educated on the job prior to and during the change."**

Staff members who have interned at St. Michael Junior High School in Calgary "fit" the team situation more quickly at first than those that have only had team teaching indoctrination seminars prior to coming on staff and those that have had indoctrination make better team teachers at first than those who come to the school "cold" the first day. Furthermore, luncheon meetings where an inspirational article from a journal is discussed help to swing the staff members toward the techniques necessary for team teaching. Miss Barbara Sizemore, Principal of the Anton Dvorak School in Chicago, uses this technique before classes in the morning to inspire her staff.

**3. "Evaluation changes proceed along with innovations."**

The Ridgewood High School in Chicago has a research person on staff for the purpose of evaluation. They call on her to solve any problem that seems to be getting in the way of the total or partial progress of the school. This is the only school that I was not allowed to photograph while walking about the building. I was told that their research had shown cameras to be very debilitating to the students while in class; I tried taking some pictures anyway and was promptly questioned by an anxious teacher of a seminar group who wished to protect the findings of their research. I noticed that my camera was in fact very destructive to classes in subsequent visits to other schools. Ridgewood uses visitors to teach students how to explain their own school by making them rather than teachers take visitors on tours of the school. By this technique they attempt to gain an advantage from something that would ordinarily be a disadvantage to another school. Their research has shown the visitor work load to be a serious disadvantage to a teacher.

The ability of teachers to evaluate students differently from teacher habits in the past, depends largely on an acquaintance with educational psychology and research statistics. They must be able to design new tests to fit unique situations other than purely normative. Universities should place more emphasis on these techniques in their teacher training programs of the future. The ability to use these techniques of testing in general is very useful, especially if the teacher is confident and practiced in the techniques. Where and when they may get the practice is open to question.

**4. "Shortcomings are remedied as soon as they are discovered."**

At times during the school year the team teachers in St. Michael School approach me with some anxiety and state that something or other is "just not working out". I remind the teachers that in most cases the decision is up to the team if the conflict lies within the area of team responsibility; sometimes I see the thing to be changed on my own and on rare occasions have to step in with suggestions for desirable change. In the ordinary course of events, the team just needs some creativity in order to solve a problem and this justifies building conflict into the team itself. I have done some research on this problem recently and find the whole area of building conflict into a team, through the personalities chosen, a fascinating one. Within reason, interconflicted team members result in creativity because they have many more avenues of choice available to solve a problem than have teams who by their very nature avoid conflict and approach conformity. This is a whole new area of human relations. Imagine the administrator out looking for persons who would be in conflict so as to gain in creativity. Addendum A reviews this matter in greater detail.

There is a good deal of natural inertia that creeps into the team from time to time and it needs a force either from within or without to change it. Preferably it should come from within; and therein lies the satisfaction — a professional satisfaction.

**5. "Appropriate facilities are obtained."**

Appropriate facilities are difficult to decide on. My experience and investigations suggest to me that the school plans in Chapter 7 reflect some of the better pieces of research done in the United States on facilities for the teaming tasks, especially Nova High School, Fort Lauderdale, Florida, and Wisconsin Heights High School, Mazomanie, Wisconsin. Educational Facilities Laboratories of New York have by far the most sensible suggestions for schools of the future in my opinion. Too much time and money are spent on the more spectacular large-group instruction areas with the result that the other areas for team teaching are neglected. The Wayland High School at Wayland, Massachusetts, and Nova High School are two schools that have very sensible large-group areas for instruction, but they have also taken into consideration the need for seminar and independent study areas.

St. Michael School has operated for over two years with traditional facilities. The staff would be enthusiastic if the School Board saw fit to give them a purely flexible building. School Boards, having to look at the overall picture, are not likely to do this at present. In any event, it appears that teaming can be carried on by staff that is trained or retrained for the purpose and it can be done in a fairly traditional building.

**6. "The financial implications are considered so that new procedures are reasonable in their demands for added expenditures."**

Much assistance may eventually be gained from the Alberta Department of Education in describing acceptable facilities in terms of money and square feet and purposes of the room(s). The team school that is truly flexible, where the team can make real professional decisions, is rather remote if this kind of help is not realized from the vertical educational structure that exists in Alberta.

**7. "Adequate, honest, easily understood information about the changes is provided to lay and professional groups."**

The most important word in Dr. Trump's last point is honest. The honesty of the administrators and teachers regarding what they are actually doing is most important. At all costs, the administrators and teachers must avoid publicity for its own sake because it is deadly in a school and community. The St. Michael staff and principal have striven to achieve this aim so that when visitors come to St. Michael School they see the good with the bad and help with the evaluation. No one, it is hoped, changes lesson plans because a visitor has arrived. Above all, there must be no mistaking the techniques or using them for wrong reasons. Dewey's "Activity Program", designed for the purpose of approaching a more individualized program was so badly misunderstood during the 30's and early 40's that it was largely discarded as impractical. Many educators in the United States expressed to me a fear that grave misunderstandings about team teaching already exist. It is true that too many educators look upon team teaching as a means of teaching large groups of students; but it is also true that the real value of team teaching comes when small groups are active in seminar dialogue and individuals have a real chance at independent study in properly equipped areas of the school. And it is also true that in these last two areas of learning — seminar and independent study — the teacher and the student play far different roles from the traditional ones.

## CHAPTER 5

## HOW TO TEAM TEACH

Team teaching is a technique designed to enhance and promote professional development. Each school I visited presented a different approach and a different stage in development. This may make administrators uneasy as they envisage schools in their system developing strongly in different ways. In any event, the schools do improve the learning environment through increased opportunity for professional activity.

I became aware of the professionalism of team teachers very quickly while talking to them in the United States. Team teaching is designed to defeat the inertia built into traditional school systems. The structure of the traditional bureaucratic school system has a very necessary built-in inertia. It keeps all teachers as much on the same track as possible — which is a very sensible and wise democratic process according to its own principles. However, it tends to stunt professional activity and decision making at the school and classroom level. Teachers are not able to decide easily that a certain group of students should vary from the regular program, for remedial work or a study in depth, during the normal daily or weekly program. They are tied down by tradition, administration, regulations, time tables, text books, curriculum and final examinations set by other educators.

While visiting one large school system, I found little team teaching. When talking with administrators there I discovered that they didn't like team teaching because they didn't believe that large group teaching was any answer to educational problems. When seminars and independent study were explained to them, they immediately became enthusiastic. But they then stated sadly that the only way the new technique would work would be with an impossible number of teachers, rooms and dollars, and this became the main argument heard against team teaching in every instance.

This chapter will attempt to shed some light on how the techniques of team teaching may be realized without exorbitant sums of money or numbers of personnel.

## HORIZONTAL TEAMS

The horizontal team, which consists of a group of teachers in the same subject area, is the easiest to visualize; however, it is also the most dangerous to use because of the overt personality conflicts that can easily limit the effectiveness of the team. The intimacy of teaching together evolves all manner of emotional involvements and commitments that could cause a rift eventually, resulting in a mere division of labour between the team members.

But there are features of the horizontal team that do not appear in the vertical team approach. Teachers in the horizontal team can take two classes together for large group work and use a "ping-pong" method of teaching — one at a chalk-board with the other before the class, or two before an overhead projector. One teacher can lecture while the other illustrates. During this time there will be occasions when the teachers enter into a dialogue — this gives the relief of two voices and two personalities and adds the unique feature that what one teacher forgets to say can be inserted by the other. If a concept is not getting across during one teacher's lecture, the other teacher is able to add to the discussion or reverbalize the discussion or illustrate the discussion to gain clarity for the students. This technique has been used to good effect in my school for the last two years.

The only real difficulty has been between teachers who have radically different philosophies regarding their disciplines, i.e., modern mathematics versus traditional mathematics, or structural grammar versus traditional grammar. However, if the teams state their consensus regarding the approach to be used before they go into classes in the fall of the year there is a minimum of clash. Above all, the students and teachers enjoy these classes and have never been known to be disturbed by one teacher correcting another, or one teacher adding something another has forgotten. I have had teachers suggest from the back of the room "I don't think the students back here are getting the point. Can we go over it again?" Naturally, if the teachers expressed obvious irritation with each other there could be trouble; this must be avoided at all costs.

Furthermore, one of the teachers can give a short quiz at the start of a lesson, take it out and mark it and return the feed-back to the students before the end of the period. The other teacher will go on with the planned lesson and activity for the interval between the quiz and feed-back. The teams at St. Michael School try to get three experiences or activities into each 45 minute period and find that two teachers can allow for more variation than is otherwise possible. For example, one teacher can pick up the assignments from the day before and begin marking them or evaluating them. It is often possible to get them back to the students before the class is over.

The Nova High School uses what they call a "middle class" of 50 students for classroom instruction (up to 150 for large group instruction and 15 for seminar). As this approaches the size of two junior or senior high school classes in Alberta, it occurs to me that teachers paired with two classes of 25-30 each would be more efficient with their time during the school day rather than the teachers having to take all assignments home. By placing two classes and their teachers together on the time-table the administrator has greater flexibility for those teachers and those classes later on in the day; it also makes the two teachers more visible to each other and learning from each other is a distinct possibility. In one team school I know of a case where the principal has rescued a weak teacher by placing her with a successful teacher.

One teacher can take three classes for large-group instruction while the other two plan in the staff office for a future seminar session with the same classes. The seminar sessions would be based on the large-group session and students may break down into groups of 8-12 for discussion using teacher-designed guide-sheets to direct their dialogue. The three teachers would float between the groups to give advice, direction and correction without actively teaching. A great deal of care must be taken by staff in this kind of activity but it does work where properly designed. Most team schools agree that the technique works better with superior students but our experience at St. Michael School suggests that some weak students begin to discuss essays, literature, history, current events, etc., who would not otherwise do so.

Horizontal teams plan lessons, seminars, independent study, examinations, etc., together and gain from each other. The teams eventually arrive at a code of honour that rarely allows one member to let the others down; the students get this feeling as well and knowing that planned activities will come off on schedule they tend to get their assignments done on time. For example, if the first draft of an essay is to be discussed in seminar on a certain day the students rarely come unprepared. If a test is scheduled for a certain day the students know that it will come off regardless of the teachers involved and know that they will get almost instant feed-back on the results. Students sometimes know that they can manipulate one teacher or another but they hesitate when dealing with a team.

The John F. Kennedy School in Washington, D.C., is a team school that has many of the team aspects that allow more freedom for team planning and evaluation. They have a technique of alternating academics, fine arts and athletics that is very functional. By alternating the three areas of study and staggering the lunch hours, the staff has time to meet and plan courses and discuss methods and students. Once per month, the teams meet with external and internal guidance personnel to discuss the more important problems. This happens at each grade level and having sat in on two of these sessions, I was very impressed with the possibilities. Furthermore, a combination of the Kennedy School, the Wayland High School and the Nova High School would provide the flexibility of space required without too much additional expense, if any.

To conclude, I found effective teams of the horizontal variety in most schools visited. However, Evanston Township High School, Evanston, Illinois, perhaps has something very significant to offer. Dr. Michael, the principal, has been in on the team teaching studies in the United States since Sputnik. He and Dr. Trump have travelled many miles and have spoken to many groups on team teaching. In Dr. Michael's school, the staff is excellent and hand-picked. The only area that continues to team in Evanston is in the English, literature and history departments. They have an $8,500,000.00 building program that will furnish them with flexible classrooms and independent study areas. They like the independent study idea and, of course, they have the staff to make it work. However, what was significant to me was their desire to continue to team horizontally in English, literature and history. These subjects will be taught by pairs (dyads) of teachers specifically chosen (in pairs) by the chairman. They believe that these subjects are so wide in scope that two teachers with groups of 50 - 60 are better than one with 25 - 30.

They are not as enthusiastic in the mathematics, science and foreign language areas. This was also noticeable at Nova High School, which is relatively new. There too, they are less likely to team in mathematics.

I believe this to be quite true of the mathematics-science areas and find that staff is hard pressed to team in these subjects in St. Michael School. This is not to say that it does not nor cannot occur — it does. However, it is less likely that two teachers will enter into dialogue in front of a mathematics class and less likely that they will break into seminars. However, it is most likely that remedial groups will be formed from time to time as required, and science demonstrations can be assisted by the presence of an extra teacher.

In any event, the horizontal team has possibilities for the future in spite of the dangers of personality conflicts.

## VERTICAL TEAMS

The main exponent of the vertical team is Dr. Carl Peterson, principal, Easton Area High School, Easton, Pennsylvania, who has what he calls "a school within a school". His grades ten, eleven and twelve are separate in that the individual grade has its own staff and principal. The teams in each school are organized across subject lines and co-operate to integrate activities wherever possible.

The mathematics, science and biology teachers will form a team, whereas the English, history and literature teachers will form another. This type of teaming has the disadvantage of not having the visibility of the horizontal team (visibility within any one subject discipline); however, they do co-operate in planning together; they do have advantages in location, in testing and in being able to get at defined portions of their student population that need remedial work or work in depth.

This type of team gets away from the possibility of personality conflict that is dangerous in the horizontal team. At least, there is less chance of personality conflict between members of a team composed of different subject disciplines. I am eager to try out a team of this type in my school in order to examine the possibilities.

The teams at Easton Area High School are at the moment only capable of looking after the superior students in each of the grades ten, eleven and twelve. One example of how this is done is that a segment of the grade ten population will be taught by three teachers, a mathematics teacher, a history teacher and an English teacher. The three teachers have 90 - 100 of the best grade tens in three separate rooms or in a multi-purpose room (three adjoining rooms separated by folding walls) that may be opened up into one large room. In any event, the three classes have one large area into which they go as a sort of commons or study hall. The three classes are taught in rotation by the three specialists. The English teacher teaches classes A, B and C in that order; the history teacher teaches classes in the order of B, C, and A and the mathematics teacher teaches classes C, A and B. Thus, each teacher would face each class once.

The fourth period is a large group period where the folding doors are open or the students are scheduled into a large commons. Here, an examination of all or part of the students is conducted by one of the team, while the others are involved elsewhere. Some of the students may be sent off to libraries or resource centres; some of the students may go into seminars; others may go into remedial classes; others may go into a one-to-one tutorship situation with a teacher, another student, or a language laboratory; and others may go into programmed study. All of these activities are carried on after the three teachers have planned them together.

Second and third teams have been developed at Easton and take the next lowest groups of students in the superior range of intelligence and achievement. They are taught by teams similar to the one described above, one and two periods later on the time table. That starts team A off in the first period, team B in the second and team C in the third. In this fashion, as each team comes to its fourth period, the large group room or area is free for each to use. The ideal arrangement, of course, would be for each team to be housed in a multipurpose room having three self-contained areas that may be opened up into one by reason of folding doors. At present, this does not exist at Easton and is a real limitation as Dr. Peterson knows. He also realizes that only the better students are able to benefit from this kind of teaming under existing conditions and hopes that the concept will be tried out by schools that have more flexible facilities.

There are possibilities that a team, properly housed, can move the large commons period to other points on their timetable if they can see an advantage. Frankly, I feel that the vertical teaming has too much inertia built into it. The danger is very real that eventually the fourth period would develop into a supervised study and stay that way unless some real stimulus keeps the team in a mood for change. This is where the charismatic change agent constantly assists the team re-evaluation of objectives and student progress. As Dr. Trump has observed, there is no use changing the teaching methods unless this in fact changes what the teachers are doing.

Dr. Peterson was writing a text book on the vertical team approach at the time this study was made. The text is now in the hands of the publisher and will be published some time in the spring of 1966 — Peterson, Carl H. - "The Easton Area High School System: An Effective Team Teaching Program for Your School." (Parker Company, West Nyack, New York) and I recommend that it be studied.

## HARVARD TEAMS

In my travels, I found that the Harvard plan of the master teacher with two or three interns or aides is used sparingly. It is agreed generally that it is best to allow this structure of the master teacher to evolve out of team planning if it is going to happen at all.

The master teacher concept seems to have run into a good deal of trouble because the administrator finds the team difficult to handle if he declares a master teacher in charge of a team. It is termed a "kiss of death" by many educators if the administration declares one of the teachers the master or gives one of the team members merit pay. It seems that the team must look for most of its rewards in the professional activity carried on by the team as a whole.

Even in the New England area, I was made aware of the difficulty that they were having with the Harvard plan. The teams usually evolve from groups of teachers with equal status; if a leader comes from this group it is in the natural course of events internally.

## INDEPENDENT STUDY

Large group instruction and small group discussion are motivational by nature. Independent study is a result of these motivational activities and it is implicit that for independent study a material resource centre must be established in the school building. Great care must be taken that independent study sessions are highly motivated and this implies that the teachers will actively sample the quality of the student work at frequent intervals. However, if the motivating aspects of teaching are not functioning at a very high level, the independent study must fail.

The Abington High School, just outside of Philadelphia, tries to give the students three areas to go to for independent study. There is a commons A that is reserved for students who do not feel like working — a "goof-off" area. Commons B and C are reserved as study halls under teacher supervision for students who feel they need the structure of the supervision. Their library is a study-resource area, where the student may find experiences in depth. The library always has two librarians on duty and the atmosphere is very scholarly.

This last area is restricted to small groups of students who are eager to work and these are not necessarily the most intelligent students. The students are not selected for the library area. They are the first 100 to 120 students who arrive each period. If a student misbehaves, he is excluded at once.

Principal Glatthorn remarked to me that he had noticed a decided decline in the use of the "goof-off" commons as the students began to grow tired of the novelty; moreover, he hoped that the future would bring the students around to ignoring the room altogether. However, Wayland High School tried independent study for several years and had to discontinue it because some students were causing unfavourable publicity by "goofing-off" into the business area of the town. Now, all that Wayland has is an honours pass system. (Students with academic honours are allowed the freedom of the school during study periods). John F. Kennedy High School, Nova and Wisconsin Heights High Schools all use the independent study system and are experiencing difficulty. The students are not trained to this activity and find it hard to stop from wasting time. The staff in the areas are required to let the students carry on as they like and as a consequence, I saw little that could be construed as "study". However, at Ridgewood High School, in Chicago, the students there had a much different attitude and most were involved in their studies. It was also noticeable that the Ridgewood staff is less likely to stand for "idiot behaviour" on the part of the students.

The ultimate in independent study is to be seen at the University of Chicago Laboratory School. The areas for independent study were beehives of activity and whenever student conversations were overheard by me, the conversation was always academic.

However, all of the above mentioned schools have their own peculiar populations and limitations. I wonder whether this activity can be successfully carried on by all high schools and staffs in the City of Calgary. It could, if all staffs were teamed and capable of building fires in all of the students — then the students have a motive to use their own time in the pursuit of knowledge in an independent study area. On the other hand though, it would be a valuable goal if even 25% of our students begin to take advantage of independent study. Certainly no one could argue that they are doing it now.

* * *

The following are items that I have found to be implicit in the team-school involvements:

1. **Charismatic Leadership.**

Gene Howard, principal of Ridgewood High School, showed me a schematic drawing of his school staff organization. It indicates clear communication between himself and his assistants, faculty heads and research personnel; however, what Mr. Howard was most concerned with at that time was another line from himself to the rank-and-file teacher. He realizes that his personality is important to his staff and tries to keep the lines of communication open. He is struggling to improve his line from principal to staff.

This reintroduces the problem mentioned earlier — is it possible to have a team school operate today without a charismatic leader? Can the school board and superintendent change an entire school system, bureaucratic as it must be, without using charismatic leadership? School systems all over North America have changed over to the so-called modern mathematics quite successfully but team teaching is a violent change and means a change in the human approach to teaching. The best this writer can suggest at this time is that school systems wanting to examine this change should create a model system or school and place charismatic leaders in charge of teachers who are trained and committed to the experiment.

2. **Staff hired with a commitment to the experiment.**

This is to say, that the staff will know of the professional involvement expected at the school and be prepared to accept it.

3. **Staff indoctrination and training.**

Dr. Marie De Carlo, principal of Bushey Drive Elementary School, Maryland, introduced me to the philosophy of indoctrination of staff and students before teaming occurs. The new roles of teacher and student must be thoroughly understood by all and Dr. De Carlo deliberately sets out to break down all former concepts of teacher and student activity that do not fit the teaming activity. She then replaces them with new definitions for teacher behaviour — definitions such as those in Chapter 4.

However, this takes inspired leadership. If the teacher training colleges, faculties of education, and local school boards would train teachers for team teaching and not for the traditional classroom, then perhaps the change-agent would not be necessary at the school level. Perhaps the principal would not have to exhibit so much charisma — perhaps none at all. Most principals of team schools whom I met were charismatic or inspirational by nature and evoked considerable loyalty from the staff. Where the charisma was absent or decreasing, I found the team process to be weak and misunderstood. There is so much confusion involved in making independent decisions at the team level that at the outset a team needs inspiration from time to time. If they were properly trained for the process of living with confusion, they might be better able to cope with it. Where charismatic principals were forced, more and more, to absent themselves from the school or become more remote from the staff, the schools showed signs of deterioration of team activities for both student and teacher.

4. **Teacher offices for the teams and modification of the traditional classroom image.**

Taking the teachers' desks out of the classrooms and placing them together in an office tends to unify the teachers and ensures more interaction during the day. It removes them from the "this is my classroom and no one else has any rights in here" type of atmosphere. Audio-visual aids, supplies and references placed in the staff office tend to direct the staff into co-operative activities. These co-operative activities bring together teachers of the same or different academic disciplines. Vertical teams, teachers of different disciplines, attempt to integrate their respective subjects into co-operative lessons or make better use of the building areas and timetable assigned to them as a team. Dr. Carl Peterson, Principal of Easton Area High School, has teams of the vertical type and he believes them superior to the horizontal. Dr. Trump is also leaning this way now as he points out, "I prefer teams that cut across subject lines."

5. **Written team-commitments to methods, philosophies, groupings of students, and use of technologies.**

6. **Team-literature available for the staff to read independently, and discuss in the occasional seminar.**

7. **Staff travelling to other team schools to observe.**

8. **Individual team-planning sessions on a regular basis as well as incidental planning.**

9. **Total involvement of the staff rather than an experimental group.**

10. **Some means of varying the size of student grouping.**

11. **The more visible the staff and students are to each other during the school day, the more they must co-operate. Discipline becomes minimal as individual students are forced into self-disciplining patterns.**

12. **The teams must be encouraged to vary the teaching and learning situations as well as the group sizes, so that with the aid of technologies and creativity, excitement may pervade the classes as much as possible.**

It is difficult to say specifically what teachers will do in the teams because this should vary from team to team and school to school. Some things are fairly clear, however:

(a) Rarely carry on class discussion or individual question and answer when in the large group — the teacher loses the class interest very quickly. Many students can't answer loud enough to be heard by all.

(b) Be certain that large group lessons are designed to stimulate the natural curiosity of the student. New instruments or techniques should be tried out on a limited variety of students at first in order to be certain of their value.

(c) Texts that are programed may be used in large groups with the teachers moving about to students who experience difficulty.

(d) Examinations and short quizzes may successfully be carried out in large groups.

(e) Break the large class down into regular classroom sizes of 25 or 30 for drill and review.

(f) Use seminar groups no larger than 15 for guided discussion of large group sessions. The sooner this activity is carried out after the large group lesson, the better. It is probably best if the group lesson is short, stimulating and provocative; then the students are eager to discuss. It is here that great care must be taken to ensure that the students are working at a reasonably high level and are not engaged in some form of "idiot behaviour". Independent study areas or libraries should be scheduled for students during the week, and the classroom lessons should be so designed as to have the students as eager as possible when they enter the area. Granted, this may be done in traditional schools, but it is more likely to happen in a team school.

**13. The staff must be encouraged to welcome the confusion that comes from the professional decisions that they make as teams.**

When the pressures of decisions are felt the teachers may be fairly certain of defeating the tendency toward the inertia of the school system at their level. The trick of the entire process however, is the sensible judgement that the team brings to bear on whether or not something is desirable or undesirable inertia.

At my school recently the social studies faculty proposed a large group forum to be held in conjunction with the local city election. The affair moved very smoothly because the team was responsible. The team had the large area available to them and their students and they also had the timetable flexibility that enabled them to make a decision wihout affecting the rest of the school. They behaved in a very professional fashion with a minimum of effort and interference, and the rewards for the teachers and students were felt for many weeks after.

**14. Staff should be encouraged to use the strength peculiar to each other throughout the teams.**

If two or three members have special ability in statistical or testing techniques, the remainder of the staff should try to get their help in evaluation of major test scores. I realize that this is done in many traditional schools but maintain that it is more likely to happen under team conditions. An English teacher might supervise a mathematics teacher's class during examination while the mathematics teacher goes down to his office to work out the statistics of a recent examination in English. If teachers and administrators look closely they will see all sorts of opportunity for this kind of co-operation that needs only an inertia defeating force.

**15. Administrators should do as much as possible to defeat the inertias of classroom structure, timetable structure and teacher-habit structure if there seems to be an advantage to be gained.**

The administrator cannot prescribe these things but by encouragement, charisma, and an open school atmosphere, the chances are likely that the staff will then take advantage of professional activity.

**16. Secretarial help should be made readily available at times most convenient to the teams.**

Typing of tests, recording of marks, organizing essays for marking, marking of objective tests, could all be done by secretarial help on occasions when the staff needs to be busy at planning and executing the professional duties they should be capable of. Ideally a secretary should be placed in the team office area for their express use.

* * *

I have seen spectacular changes in teachers occur through teaming of the horizontal variety. I have also seen teachers who did not change — in fact, they resisted every opportunity for change. It makes me wonder if there isn't a place for this kind of person in a vertical team instead. Perhaps the limited peer visibility for teachers in the vertical team would be sufficient to make them behave more professionally but with less of a goal grade for them to climb, less confusion for them to handle but still with more than the traditional teacher-growth potential.

In any event, the most serious flaw in vertical teaming is its inertia factor; whereas, the horizontal team has the personality clash in its disfavour. Both apparently have the power to make teachers grow faster and behave more professionally. My work during the past two years has proven that it may be done in a fairly traditional building so that it does not require ridiculous future financing for school boards.

With specific reference to Calgary, I believe that the basic requirements for team schools locally are:

1. The hiring of staff committed and trained to the task.
2. The building of schools with more flexible designs, including staff offices as well as planning rooms.
3. The provision of paraprofessionals and aides.
4. The freedom for staff to make independent, professional decisions.

# CHAPTER 6

# ST. MICHAEL SCHOOL

St. Michael School is now in its third year of total team teaching. That is to say that all subjects are more or less teamed. As far as possible, the subjects are handled by groups of two or three teachers. At present there are 185 junior high school students (80 grade sevens, 55 grade eights and 50 grade nines) and eight staff members, including the principal and vice-principal, each of the latter having approximately 40% of his time devoted to administration.

The grade sevens are taught by two teachers in mathematics, and three in all other subjects. The grade eights and nines are taught by two teachers in each subject except science, where the teacher may call on other teachers for assistance when necessary.

This staff has three teachers with at least one year experience in teaming. The remainder of the staff have been given in-service training. Four of the teachers have no previous teaching experience, two have two years experience, one has seven and the principal has seventeen. It will be apparent to the reader that the staff is young, inexperienced and probably adaptable.

Interestingly enough, the main effects at first seem to be on the teachers. New teachers begin to behave like experienced teachers within a month or two. The very act of planning together forces the teachers to concisely verbalize their lessons for the future. They debate the wisdom of one technique or another, one concept or another and the use of their own time.

The teams at St. Michael go through a good deal of "pain" at first as there are many extra long hours of work and many misunderstandings. Usually, at least one teacher on the team finds it almost impossible to carry on a relaxed dialogue in front of a class with other teachers present; however, when they finally do achieve the technique and the students begin to respond, the teacher's delight is very apparent.

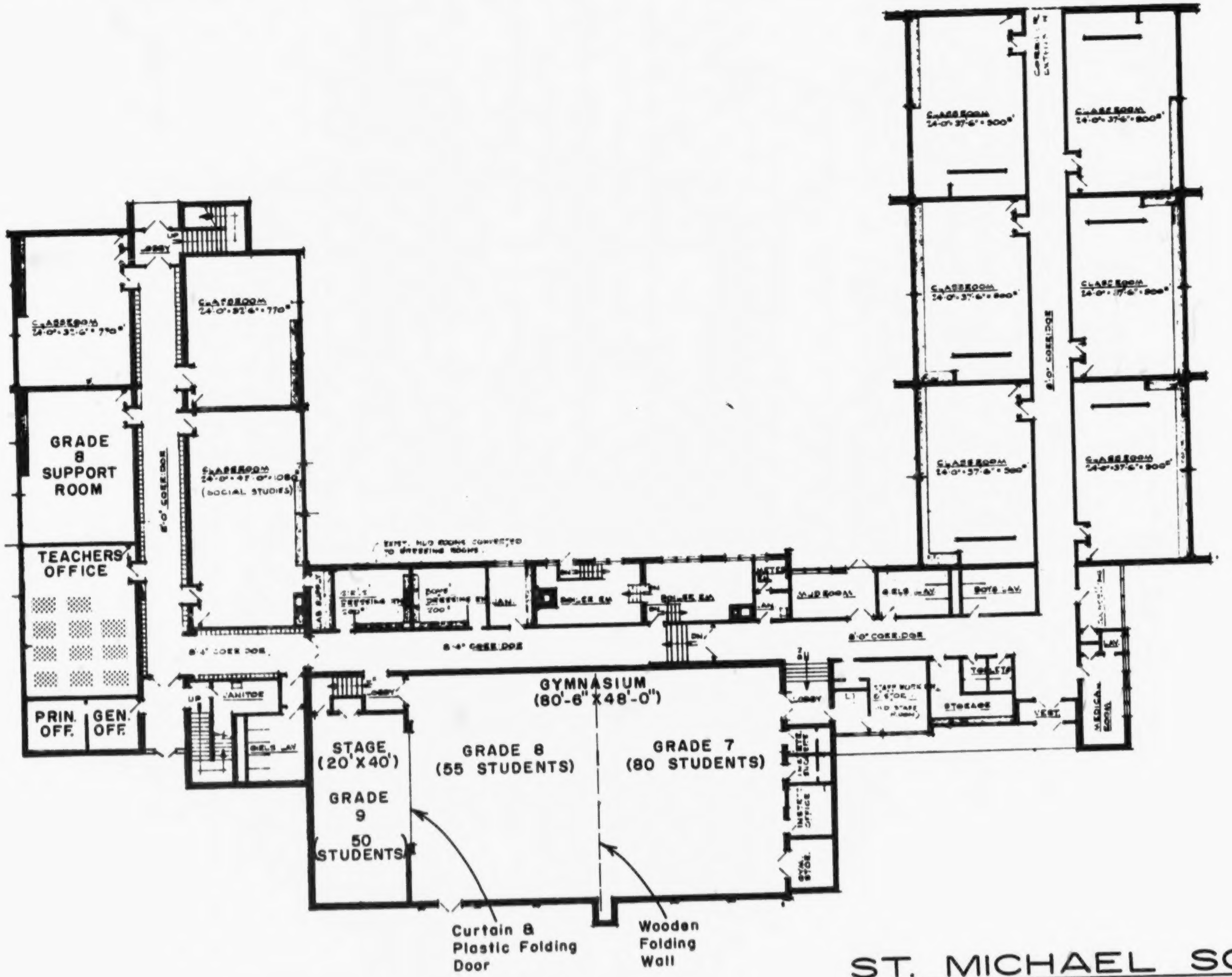
The "extra" long hours of work are often blamed on team teaching and this is not true for new teachers. My experience has always been that new teachers in a traditional system have to work almost seven days a week for several month before achieving any degree of confidence in the classroom. Those that don't work hard for long hours rarely make a more than satisfactory teacher. This is the time, of course, when the principal or experienced staff members may help. This is especially true in a team school because the teachers are so visible to each other that they may give and receive help quickly.

The present team teaching area at St. Michael School consists of the three large areas available in the gymnasium (the west half, the east half and the stage). Each grade is housed in a portion of the gym and each has an extra empty room available in the building to which they may go if the class is to be broken down into small groups.

The gym, as shown on the accompanying plans, has no special features, such as carpeting or drapes, to recommend it. It is used because it is the only large, open area available in the school.

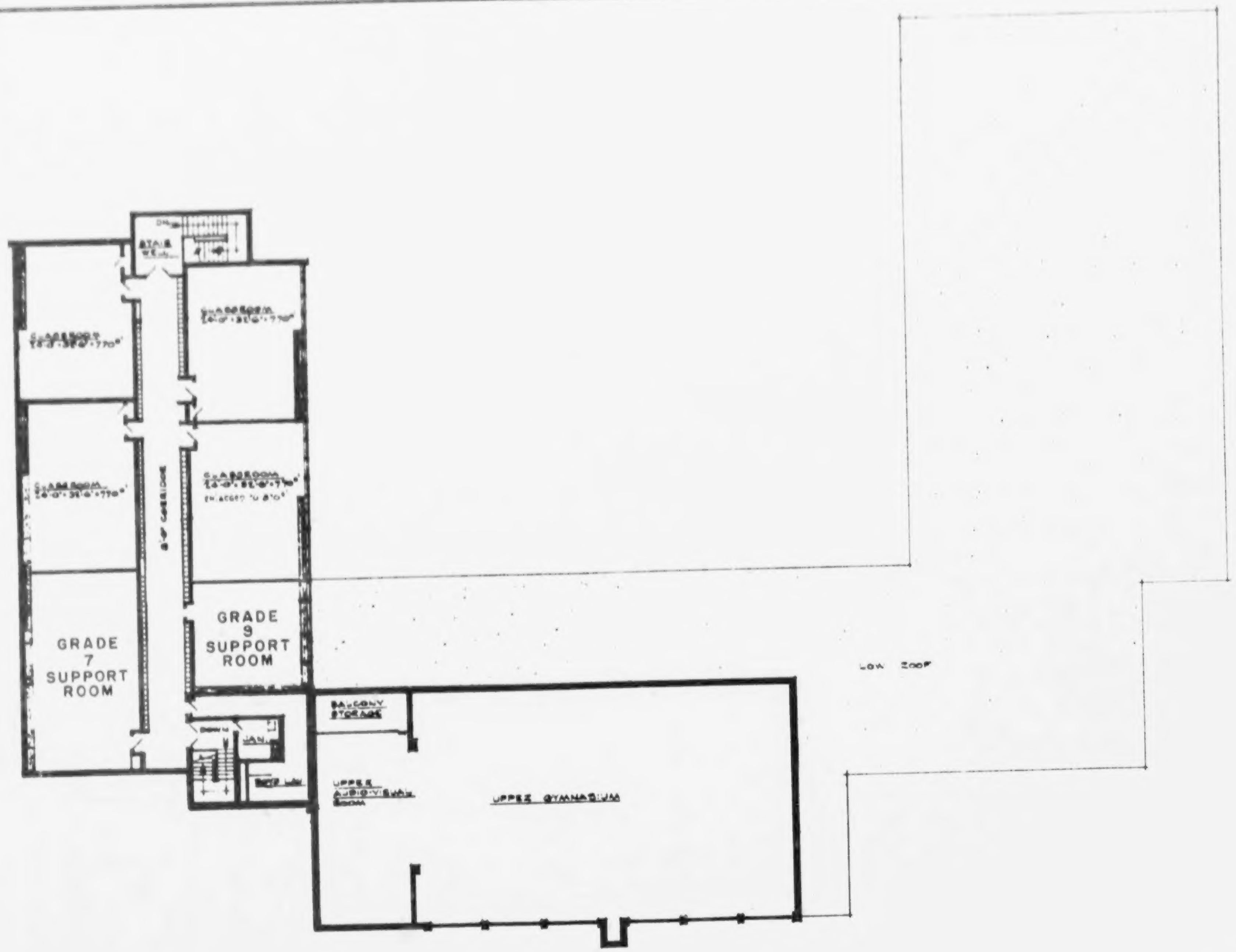
The staff, in reality, has no home room commitments and use another classroom as their centre of operations. Each teacher has a desk and storage area in that room. It is also used as an equipment centre for the junior high staff. Team planning, conferences and individual-teacher-work are centred in this room. It has proven to be one of the significant means of furnishing focus for the teams and destroying the traditional classroom image. It is an office area where the teacher may be more relaxed while working out of sight of the student. This was a feature of all team schools in the United States, and not just a team planning room. It was always, in fact, a group of teacher cubicles or cells, or else one large office with the teacher's desks in rows. The latter appealed to me as the teachers are more visible.

Teachers at St. Michael plan according to a 45-minute timetable but try to get in an average of three experiences per period. This gives somewhat of a module effect even if it has to be structured within 45 minutes. Furthermore, because the staff is so visible, they are more likely to trade periods about if one team wants more than one of the grades during a period.



## ST. MICHAEL SCHOOL
CALGARY, ALBERTA

## GROUND FLOOR



SECOND FLOOR

ST. MICHAEL SCHOOL
CALGARY, ALBERTA

During this September and October, I have had the teams prepare documents stating the team philosophies, plans for grouping, plans for deepening the curriculum, plans for testing, innovations and technologies. These documents are not static as the teams are still finding a need to change to suit the individual teachers, the kind of grades taught and the subjects taught. (See Addendum C).

Teaming has resulted in a more professional atmosphere, more spectacular lessons, better and more planning of instruction and evaluation, more questioning of the values of various techniques, and a better professional rapport between teachers.

One of the interesting features of the St. Michael organization is that it fails to absorb substitute teachers. The team planning makes it difficult and sometimes almost impossible to deploy substitutes. Perhaps a paraprofessional would be of more assistance during the times that substitutes are required.

Another feature of the school is its few real discipline problems. The teams agree that they are less likely to "blow up" at a student when a teacher peer is on the scene or nearby. The teaching is so dynamic and well planned that there are fewer opportunities for student misbehaviour. The variation of student experiences also tends to hold their interest better. Also, as the school has gained much notoriety in the past two years, students are less likely to upset the status quo. In other words, the school is visible to so many visitors that the students have a larger concept of the school than just their own community. Teachers come from as far away as Toronto to see the St. Michael School. Edmonton and Red Deer and northern rural divisions have also sent representatives. Recently, the Director of Education for Glasgow, Scotland, visited Calgary and spent one of his mornings in St. Michael School. These people are bound to affect the attitudes of students, parents and teachers alike. However, I realize that this is an artificial condition and wonder how well the school would function without it.

While St. Michael School staff has done very little objective research into the workings of their school, it is obvious that the parents are well satisfied with it and the school explains any innovations before they take place. Also, the grade nine examinations are better on a normative basis than either the city or provincial averages. Whether or not the marks would have been lower under another system of organization is a good question; however, one thing is fairly certain — the school is not at present harming the grade nine results. Moreover, the students are gaining unique experiences in activities, such as seminars, that are impossible to measure at present. The kind of research needed, in my opinion, should come from a skilled research team outside the school. This has not been done with any degree of objectivity in the United States as far as I know. If Alberta were to carefully evaluate the team schools in operation in Edmonton, Calgary and Medicine Hat over the next three years, the province could make a significant contribution to North American education. This evaluation would pose a unique problem because each team school evolves differently and each year it has a new face. In fact, a team school being open-ended, would show a tendency to change considerably during the year.

It is often difficult for me to advise people who come to St. Michael School seeking information about teaming. Often as not, they have been forced into an examination of the technique because of overcrowding, a multipurpose room having been built, an enthusiastic principal or just an attitude of "Everyone else is looking into this business, so we thought we had better too." Teachers must be convinced in their own minds as to the value of the technique and want to get involved. It must come from the staff and not from some outside influence, otherwise they are going to seek to return to a more familiar structure and never realize the flexibility and creativity of the real team school.

Teachers will have to be retrained if central administration is going to press for team teaching but society will have to pose a real crisis if it expects teachers to change in such a radical fashion. I am convinced from what I have seen and from what my school has done, that team teaching is a better way of teaching and learning, but how to keep the cart behind the horse is a real problem. While teachers must be highly motivated to accept the challenge of a team school we cannot depend only on charismatic leadership to carry through with the teacher motivations necessary; any experienced administrator will see the flaw in that process. However, if the University Faculty of Education and the School Boards co-operated in developing a team teaching program, there could be some excellent team schools in Calgary within the next ten years.

# CHAPTER 7

# OTHER SCHOOLS AND PLANS

During my trip I was able to obtain the plans of a number of the more interesting schools that I visited. While the amount of team teaching being done by these schools varies considerably they represent a fair cross section of the building designs now being used in the United States.

The plans of the various schools reviewed in this chapter are included at the end of the chapter, starting on page 25.

* * *

## RICH TOWNSHIP HIGH

### Park Forest, Illinois

## RICH CENTRAL CAMPUS

(Pages 25 and 26)

This school does a considerable amount of horizontal team teaching. It contains a minimum of corridors. Often, in going from classroom to classroom, the visitor, student or teacher will walk through other classrooms. Teachers in this school did not find this too annoying. Interestingly enough, there are no seminar rooms and the school has only three flexible areas; one three-room multi-purpose room, two two-room multi-purpose rooms.

## RICH EAST

(Page 27)

There is a small team teaching experiment in this school where I saw one English team in action. On the second floor to the right, there is a flexible area at the end of the wing; rooms 241 to 244. The dotted lines represent heavy folding doors. The acoustics in this area are poor and the teachers speak of it as the "barn". The rest of the school is quite traditional although rooms 210, 212 and 214 look like seminar rooms, and rooms 109 and 111, 136 and 138, 168 and 170, 207 and 209, 236, 238 and 240 all have flexible walls. The teachers in Rich Township Schools, however, have been encouraged to be flexible.

## NOVA HIGH SCHOOL

### Fort Lauderdale, Florida

(Pages 28 to 35)

Nova High School is a campus type school organized around a lecture pavilion. It is completely team taught with each campus house developing its own type of team, most of which are of the horizontal variety. Between the two central lecture halls, there is a roofed area with open ends called the gallery in which the students congregate. This is where they eat their lunches. Snack bars located at the four corners of the lecture pavilions supply student lunches, eliminating the need for a big cafeteria. Excluding the administration area, the four campus buildings for languages, technical and special studies, mathematics and science have all evolved according to the personality of the teachers and the administrators in each of these buildings.

The mathematics building was built after the first three and reflects the personality of the mathematics division head. The seminar rooms in the other three are walled only to a height of four feet so that the students are quite open. In the mathematics building, the seminar rooms have ceiling-height walls and they have doors. The central library area in this building is also closed in and it is much quieter.

The main feature in the Nova buildings that has implication for Calgary educators is the triangle effect of the classrooms. The angled walls shown on the plans are not moveable but the middle rooms may be divided by a folding wall. This gives an amphitheatre effect when the folding door is open. It appears to me that this type of room would be very valuable in traditional buildings as opposed to building multi-purpose rooms on the end of a wing, or multi-purpose rooms of a rectangular nature.

In the Nova plans, the teacher stations are in the corners of the classrooms which adds to the fan or amphitheatre effect in each classroom. This is truly a "Trump" team-teaching school: 1. large areas (amphitheatre areas that are flexible); 2. classooms that may be flexible (made into large areas of an amphitheatre style); 3. a great number of seminar rooms for students; 4. teachers' offices rather than teachers' classrooms and 5. central resource areas in each of the four campus houses (used for independent study). The main amphitheatre or lecture halls may be separated into three areas by means of folding doors across the two rear sections of each amphitheatre.

According to Dr. Trump, however, the school does not cost, building-wise, much more than our schools do in Calgary, something like $14.00 or $15.00 per square foot. However, it is located in a tropical area and there are undoubtedly savings possible for this reason. Nevertheless, the costly item in the Nova School is the equipment found in every classroom, laboratory, central resource area, etc. As an example, each room has a T.V. set and a telephone to the television centre. Any program desired on video tape or live from the T.V. centre can be piped into the individual classroom. The same thing can be done for the central resource areas or material centres in each of the houses. There are several carrels in each of the resource areas or material centres that have individual T.V. sets, the screens being about 6"x 8". It is the equipment that makes Nova School an expensive school building.

## FRANK R. STARBUCK JUNIOR HIGH SCHOOL

**Racine, Wisconsin**

(Page 36)

This is a traditional school which does have some 400 students and 11 teachers involved in a team teaching program. This is primarily in the English area using horizontal teams. There are seminar rooms off each of the main classrooms; rooms 202 and 204, 203 and 205, 207 and 209 are multipurpose areas. This is a very costly way of building classrooms as can be seen on the second floor. This school needs the teacher office that is so noticeable in team teaching schools. As it is a large junior high school, some 1,400 students, a school within a school organization would have to be realized before they could team effectively in this building. In other words, a complete faculty would have to be placed for each grade.

## BLOOM TOWNSHIP HIGH SCHOOL

**Bloom Township, Illinois**

(Pages 37 and 38)

The new Bloom Township High School has been built for a small measure of team teaching, mostly in English. They have a very fine library on the second floor with seminar rooms off the library which are not shown on the plan. They have some flexible classrooms, such as 257 and 255, however, the basic plan is quite traditional.

## CHICAGO LABORATORY SCHOOLS

**Chicago, Illinois**

(Pages 39 and 40)

The Chicago Laboratory School, at the University of Chicago, is experimenting with team teaching, non-gradedness and independent study. The elementary school starts some children at age 3. The school's students are the children of the university faculty and students on campus.

Blaine Hall, the elementary school, has very large rooms that were originally built for Dewey's Activity Program. On the second floor, rooms 210 and 212 are a team teaching complex and I actually saw team teaching carried on in this area.

In the newly built high school section, the school has some flexible classrooms that are not apparent on the plan and a very fine library, as one can imagine for the University of Chicago. The important thing in this school has been the development of independent study and flexibility, achieving the same results that team teaching tries to achieve. They use computers in this building; they are very necessary for their program and very sophisticated.

## EVANSTON TOWNSHIP HIGH SCHOOL

### Evanston, Illinois

(Page 41)

This school has used team teaching for the last 8 years. They have investigated its use in most areas and now have accepted teaming, using dyads, in English, history, literature and grammar. They plan to focus more attention on independent study in the future.

Evanston Township High is an enormous complex housing close to 5,000 students. In 1965, the township passed an $8,500,000 bond issue to build four wings on to the existing complex. The new wings will consist of several floors of material resource centres, surrounded by flexible classrooms. The feature for this building will be that with the present student population, administration can schedule all classes in the new wings and use the present building as a support area for use when classes wish to break down into smaller groups.

## WISCONSIN HEIGHTS HIGH SCHOOL

### Mazomanie, Wisconsin

(Page 42)

Wisconsin Heights High School at Mazomanie, 20 miles west of Madison, Wisconsin, is a complete team teaching school that uses horizontal teams. The teams hold planning sessions every morning before classes. There is also considerable liaison with the university from which the school receives assistance.

This is a "Trump" school with flexible rooms, a great number of seminar rooms, movable walls (which can be moved into various locations overnight), a home economics room (with three areas closed off by flexible doors), some traditional classrooms, two large lecture halls (humanities and science), teacher offices and a materials resources centre. The plan of the school is self-explanatory. The lecture halls are not too expensive and this kind of school could easily be built in Calgary. This type of building would be expensive and this kind of school could easily be built in Calgary. This type of building would be extremely functional for my staff and student body. The teacher offices in this school are cubicles or cells. My one recommendation would be to remove the walls of the cubicles and make the teachers more visible to each other.

## EASTON AREA HIGH SCHOOL

### Easton, Pennsylvania

(Pages 43 to 46)

The Easton Area High School is a vertical team teaching school. Vertical teams do not need as flexible a building as horizontal teams require. The plan shows that there is really very little flexibility except. in classrooms 280 to 282 and 283 and 286. Otherwise the walls appear to be solid.

### BUSHEY DRIVE ELEMENTARY SCHOOL
**Montgomery County, Maryland**
**(Pages 47 and 48)**

The Bushey Drive Elementary School, Montgomery County, Maryland, just north of Washington, is completely team taught and is non-graded in grades one to six. The school is very well led and there is a high degree of professional development among the staff. It was built as a round school to fit a triangular plot of ground. While it was not originally intended to be a team teaching school, it is quite flexible with walls that roll up like window blinds. These walls are an experiment by Educational Facilities Laboratories, New York, and are lead, covered with canvas and rolled up at the push of a button. These are not apparent from the plan included here, but they would be between two classrooms that have a common door opening. Dr. Marie de Carlo, the principal, suggests that anyone building this type of school should make each of the central areas a materials resource centre, rather than a service area. This would do away with the necessity for a library on the second floor and make the school much more flexible for team teaching.

### RIDGEWOOD HIGH SCHOOL
**Chicago, Illinois**
**(Page 49)**

A typical "Trump" team school. They have gone through the pain of developing professional teachers in the teaming process and, in my opinion, have succeeded. They do a lot of research on the effects of teaming on learning and are experimenting with the use of computers in scheduling and rescheduling their programs.

The plan of the Ridgewood High School, Chicago, shows a number of fixed seminar rooms on the second floor with a few rooms of various sizes near by. The library is not a materials resource centre by location, but it is in fact, a very fine library with just about all the materials that would be necessary to operate independent study for a large high school. The only flexible rooms seemed to be near the cafeteria, rooms 160, 162 and 166. This school attempts to use a computer at a very high level of sophistication.

### WALTER S. GOODLAND SCHOOL
**Racine, Wisconsin**
**(Page 50)**

The Walter S. Goodland School at Racine, Wisconsin, is an elementary school in which they are experimenting with team teaching. They have very large rooms for the K-3 classes, with their own playgrounds adjacent. There are large group instruction rooms that are not flexible, but which are centrally located to each of these classrooms. Students may be moved into these large group instruction areas but the principal reports that the inertia of teachers and classrooms make these large group instruction rooms somewhat ineffective. The only apparent flexible wall used in building this school was in rooms 201 and 203. Even with the large group instruction areas, this kind of school does not lend itself, as does Nova or Wisconsin Heights, to the flexibility of team teaching. However, it is much better than a traditional school. The building layout tends to keep each of the grade areas separated.

## ABINGTON HIGH SCHOOL

### Abington, Pennsylvania

(Pages 51 and 52)

A fine horizontal team teaching school that is relatively new, is well led and is achieving what it set out to achieve.

The Abington School, North Campus, at Abington, Pennsylvania, has all of its corridors around the outside of the school. There are seminar rooms in between classrooms that are very useful. The outside wall is almost entirely glass as are the classroom walls. This school houses grades nine and ten and just a few hundred yards away, the South Campus contains grades eleven and twelve. The South Campus is a very traditional school and administration wonders what will happen when the students from the team school begin to go into the traditional school. The North Campus is a very fine team school, and is much more flexible than a traditional school. The teachers from each discipline or faculty are housed in a separate teacher office. There are no cubicles for the teachers; their desks are placed about the office. This makes the office much more open and unifying for staff.

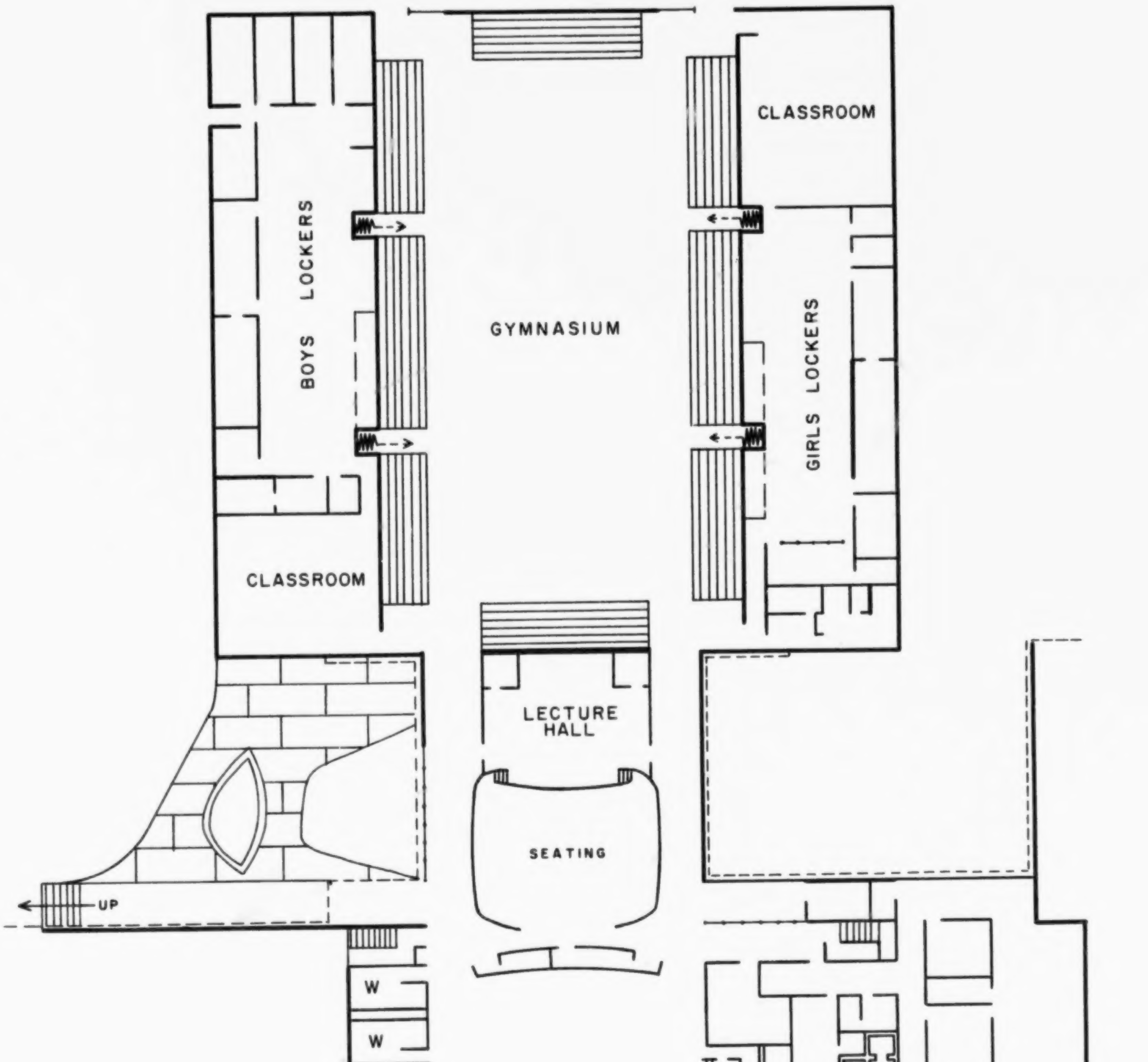
The Commons A on the ground floor is the "goof-off" room for the students. Commons B and C are the study halls, and on the second floor, the library is a materials resource centre. There are some large group instruction classes or classrooms, C100 for instance and C300 on the ends of the wings. These, I feel, are too cumbersome for proper use. I would suggest that the Wayland or Wisconsin Heights type of large group instruction room be used. This school has an expensive appearance.

## MONARCH PARK HIGH SCHOOL

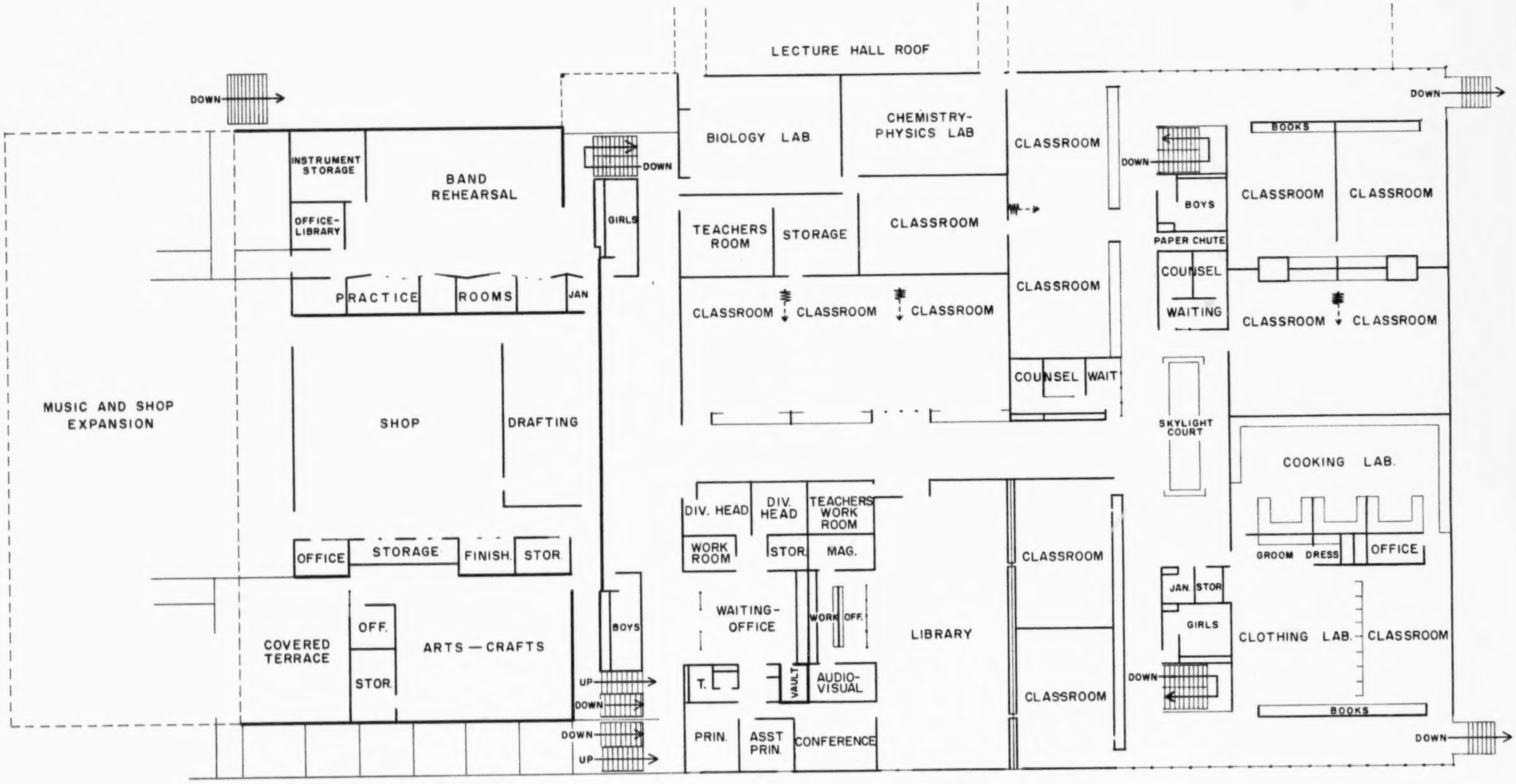
### Toronto, Ontario

(Pages 53 to 55)

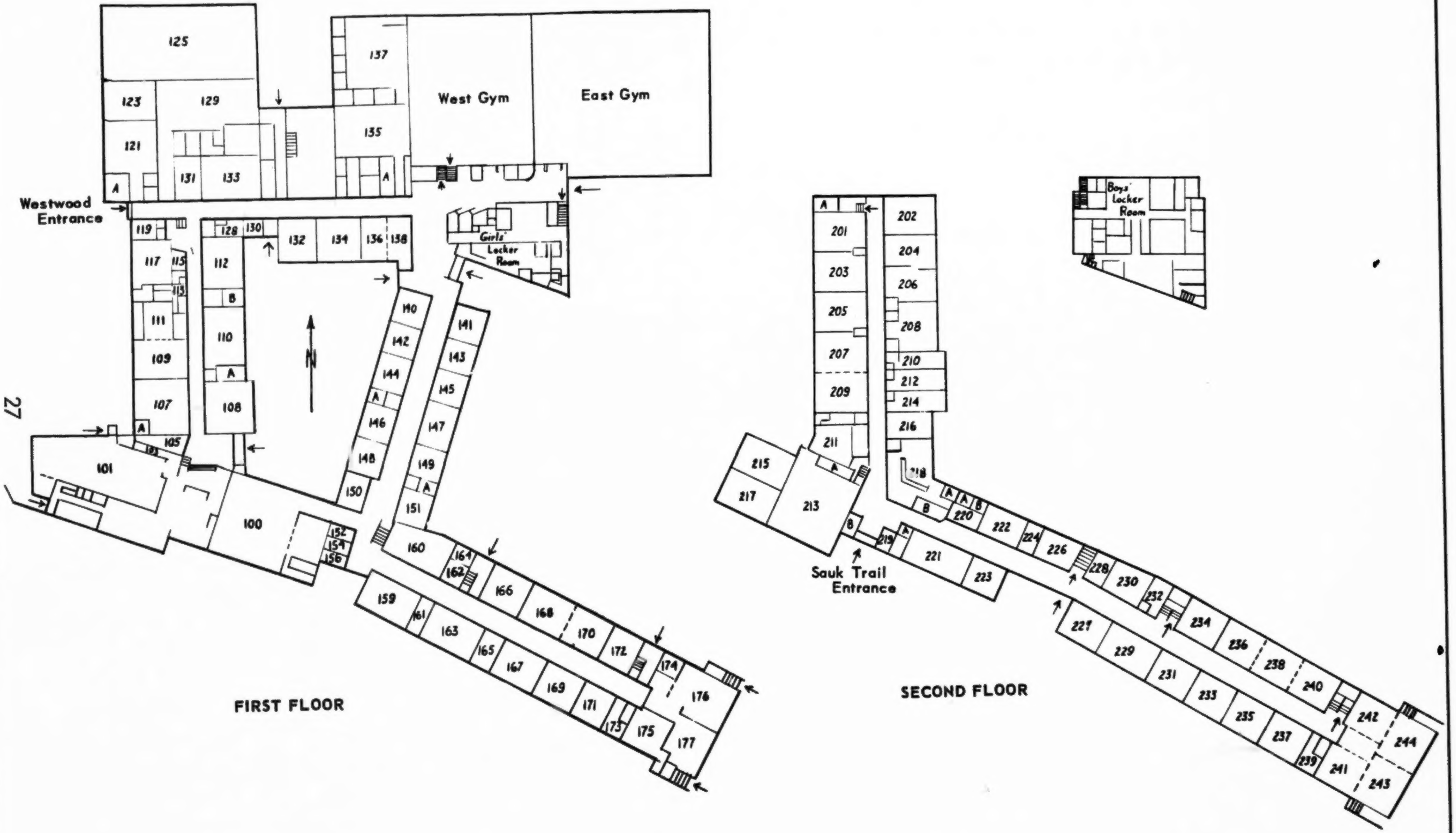
The Monarch Park High School in Toronto will house, eventually, some 1,500 to 1,700 students. It is conducting a highly structured experiment in team teaching and while being somewhat flexible, such as rooms 117 and 110, science area, it is not a team school by nature or design. It does allow some flexibility but is far too traditional in concept. It could use a school within a school atmosphere with a teacher office rather than staff room, locating the staff room somewhere else. The teachers would then deploy from their office into their own grade area.



# RICH TOWNSHIP HIGH SCHOOL
## CENTRAL CAMPUS
## OLYMPIA FIELDS, ILLINOIS
## LOWER LEVEL



## RICH TOWNSHIP HIGH SCHOOL
### CENTRAL CAMPUS
### OLYMPIA FIELDS, ILLINOIS
### UPPER LEVEL



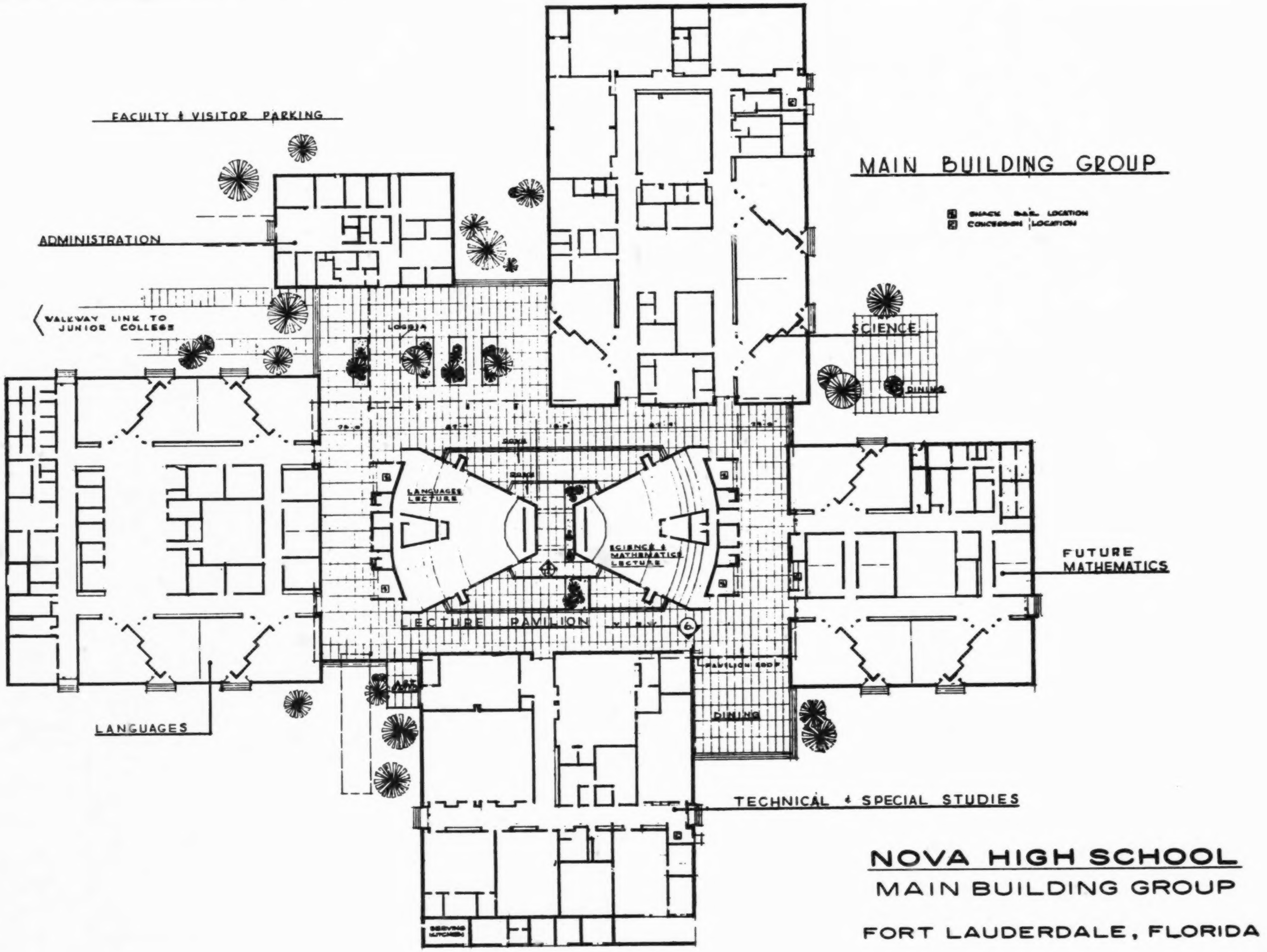
# RICH TOWNSHIP HIGH SCHOOL

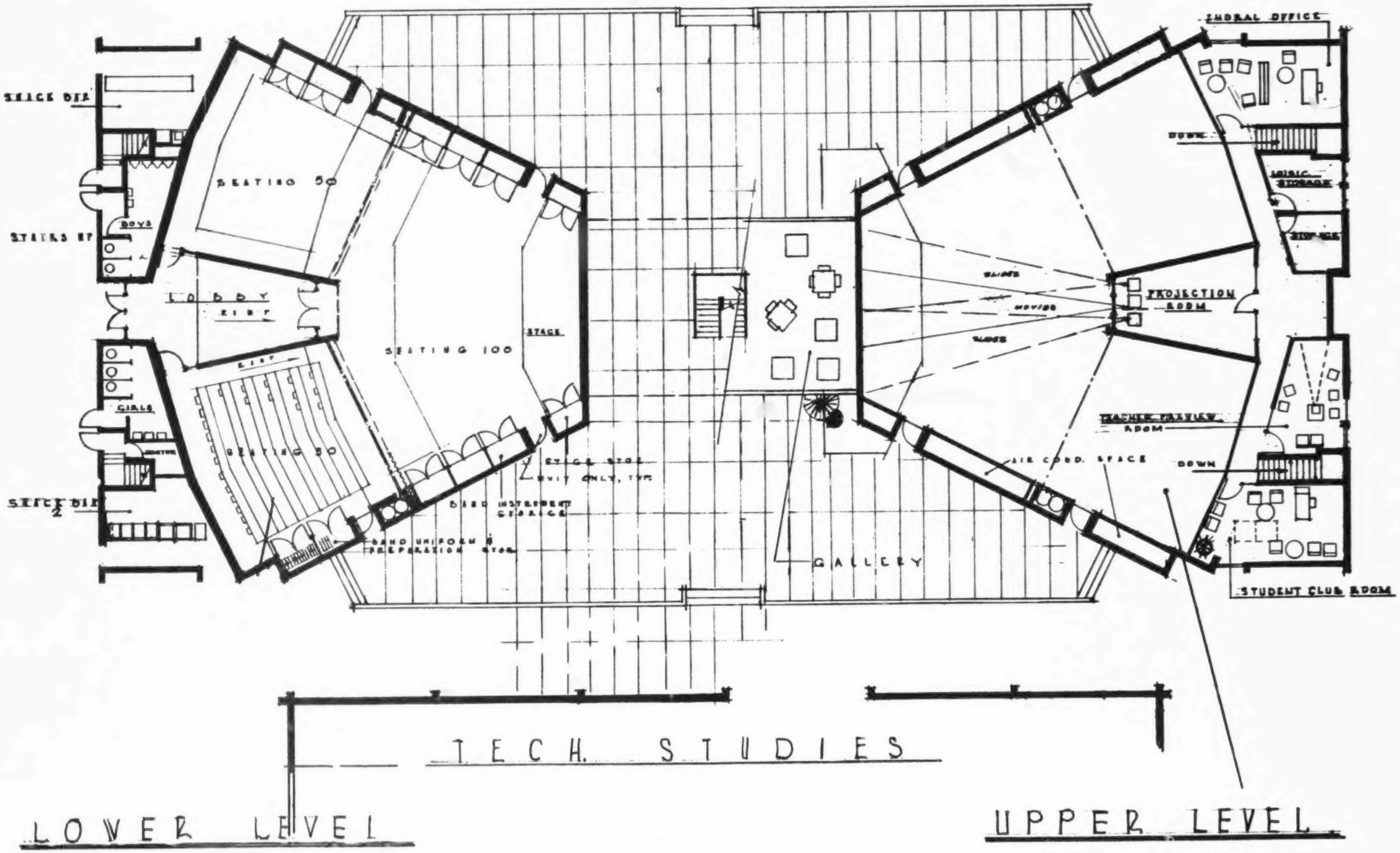
PARK FOREST, ILLINOIS

## NOVA HIGH SCHOOL

MAIN BUILDING GROUP

FORT LAUDERDALE, FLORIDA



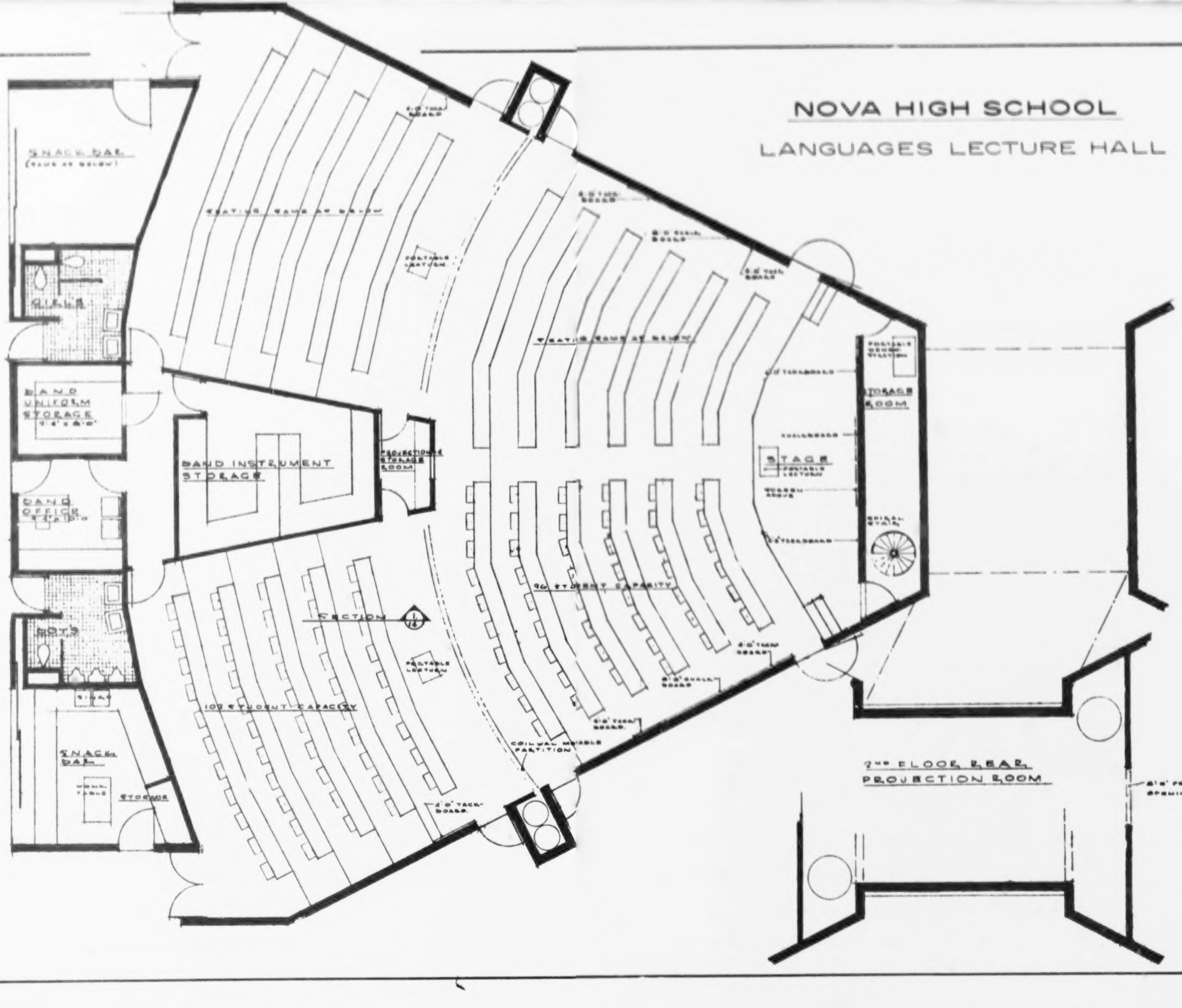


## NOVA HIGH SCHOOL

LECTURE HALLS

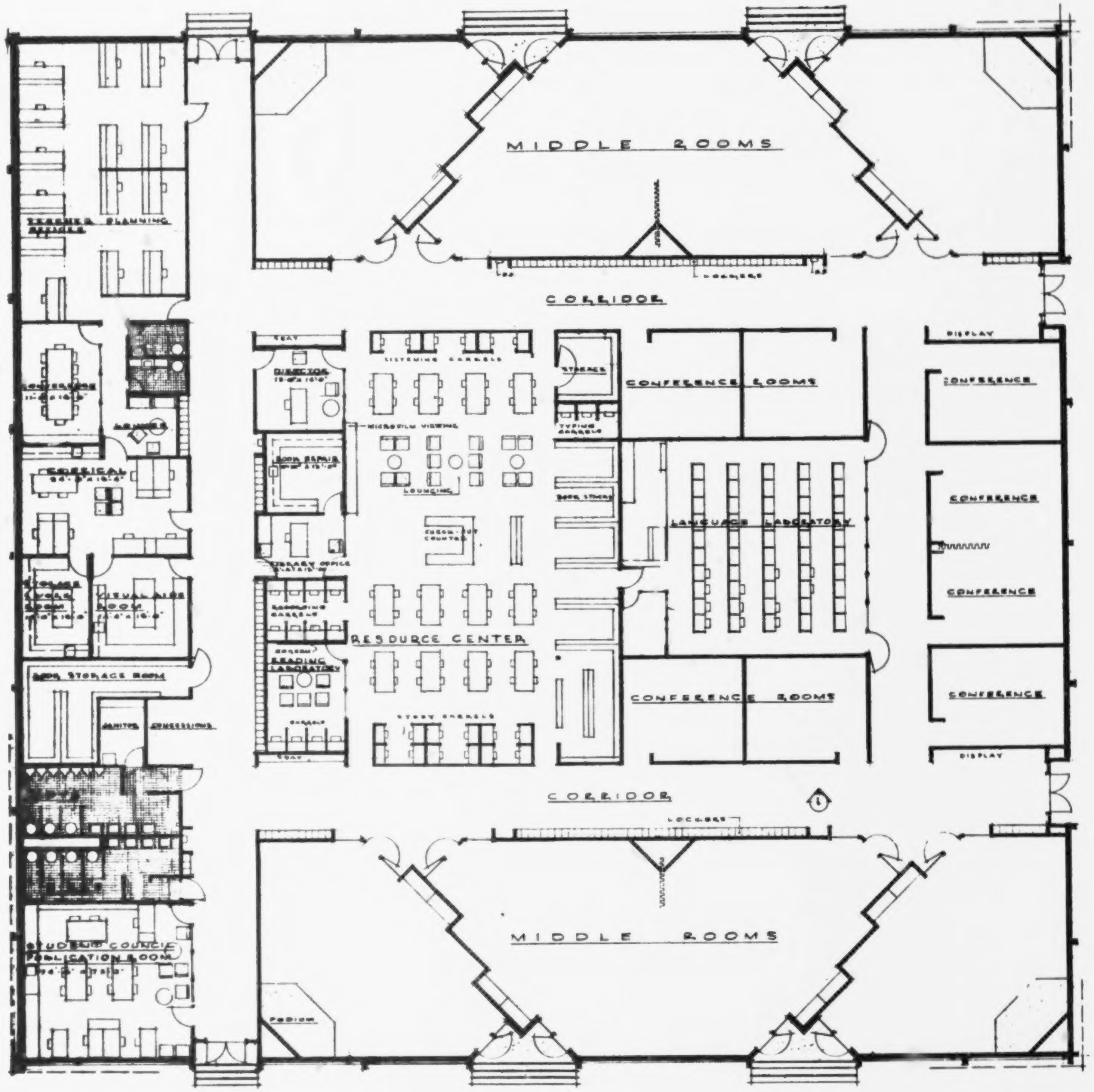
# NOVA HIGH SCHOOL

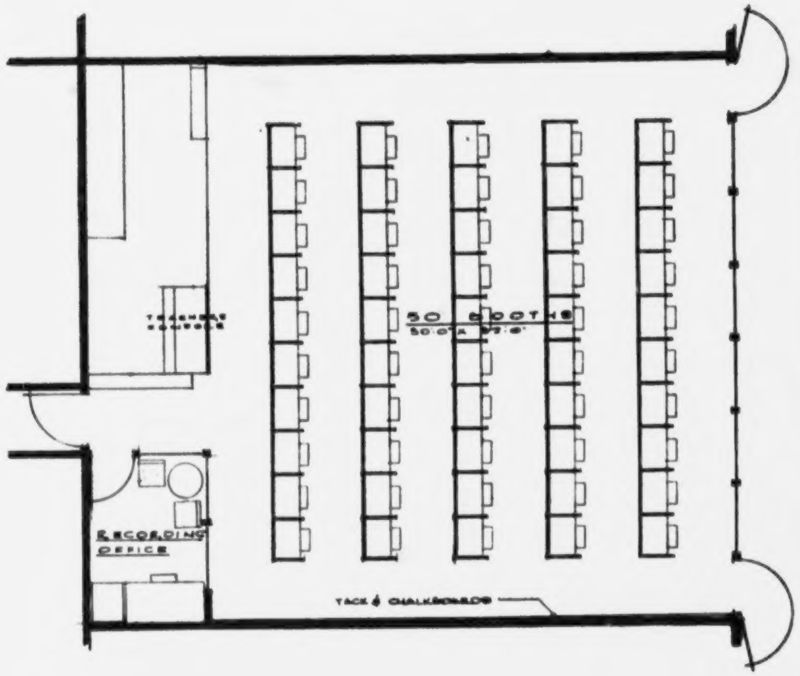
## LANGUAGES LECTURE HALL



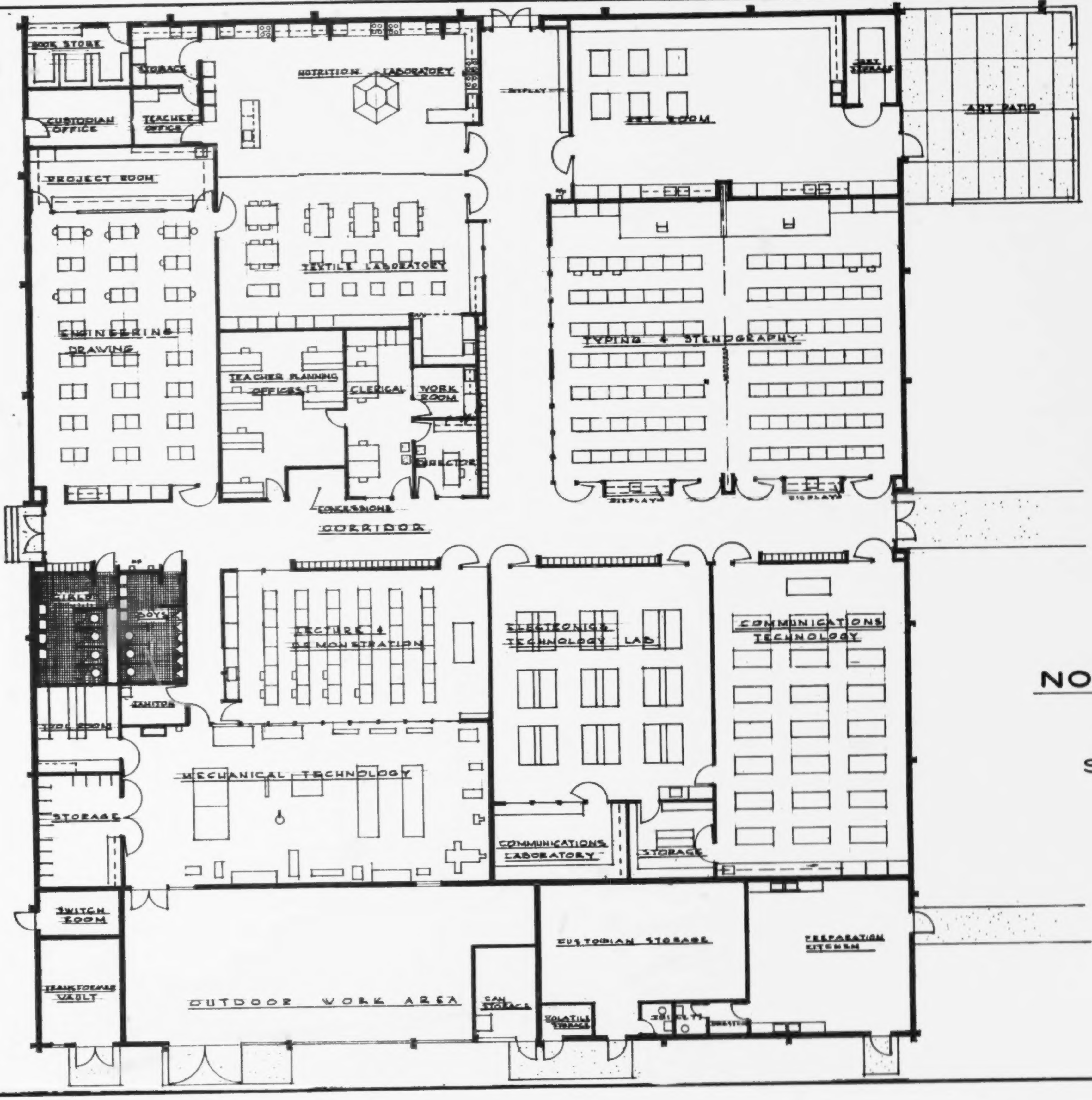
# NOVA HIGH SCHOOL

## LANGUAGES BUILDING



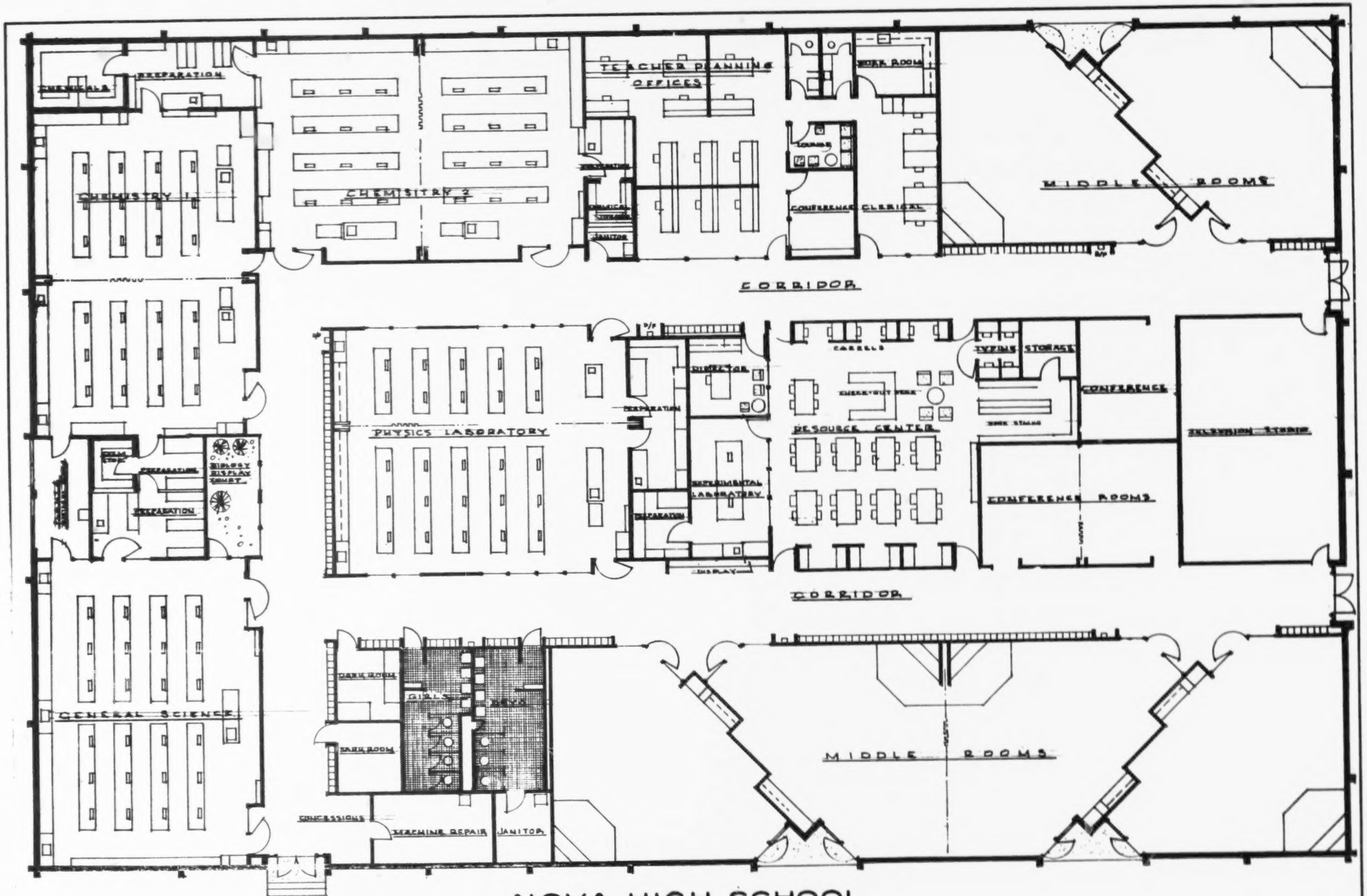


LANGUAGE LABORATORY 1/4"=1'-0"

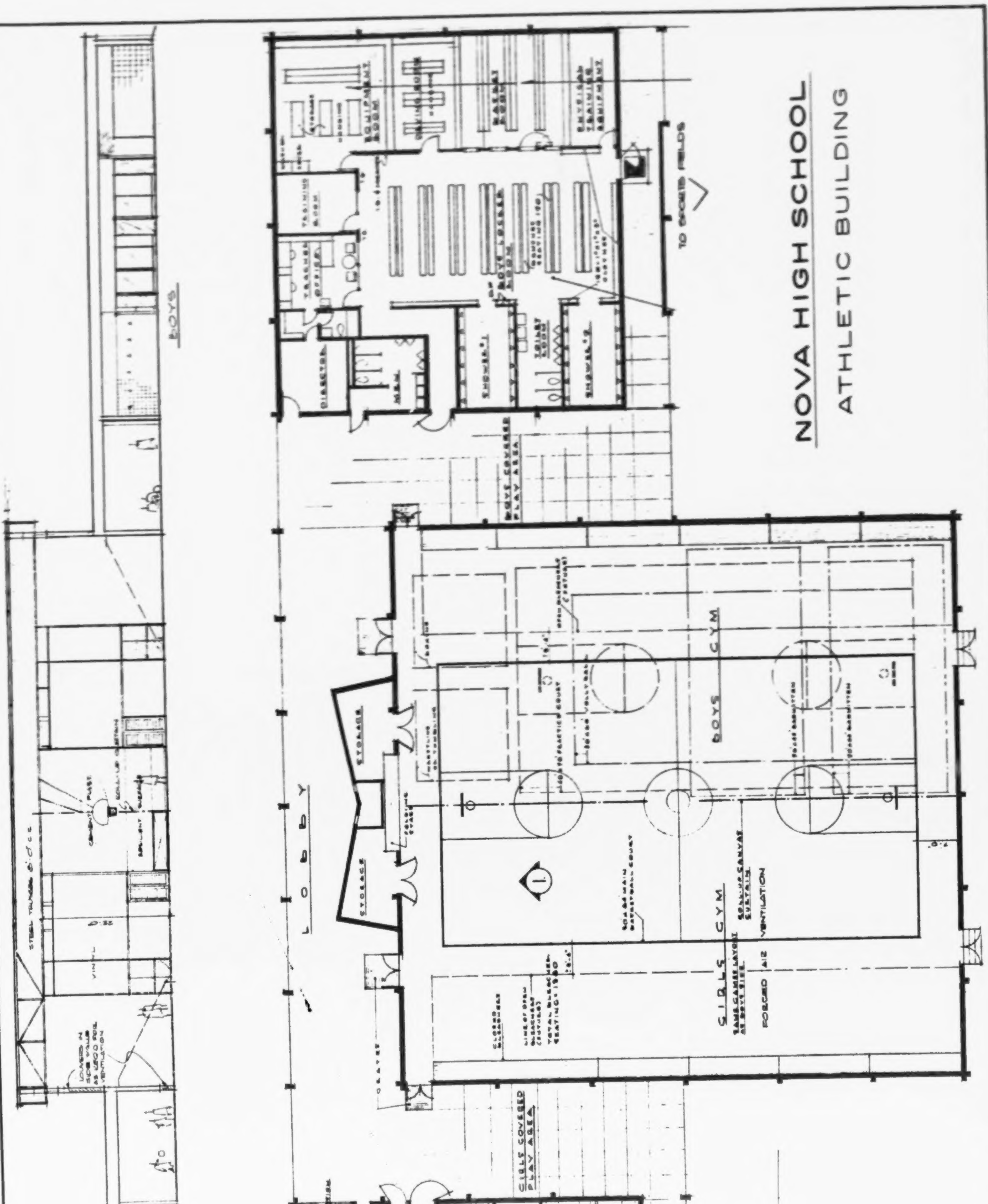


# NOVA HIGH SCHOOL

## TECHNICAL AND SPECIAL STUDIES BUILDING

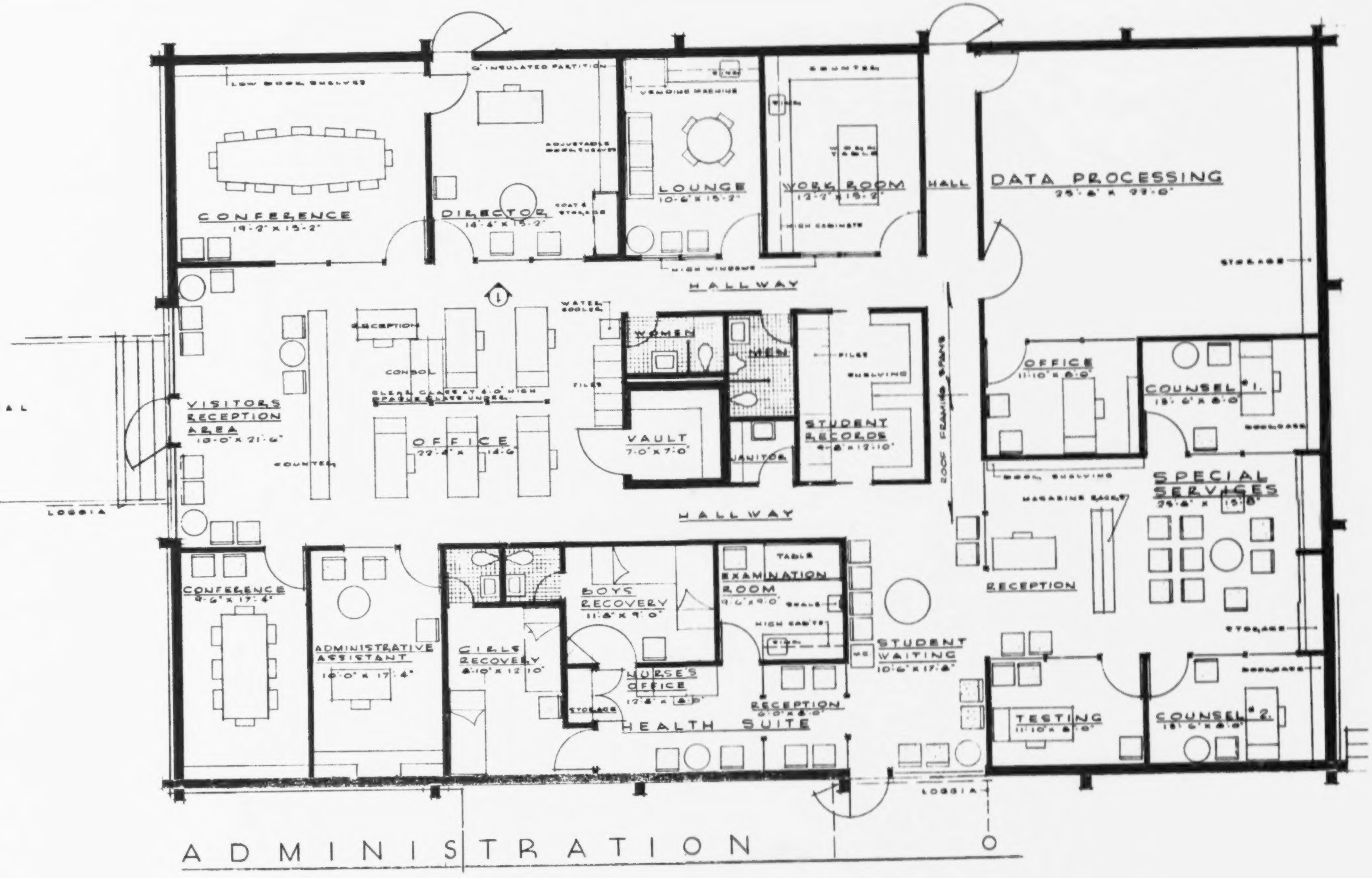


## NOVA HIGH SCHOOL
SCIENCE BUILDING



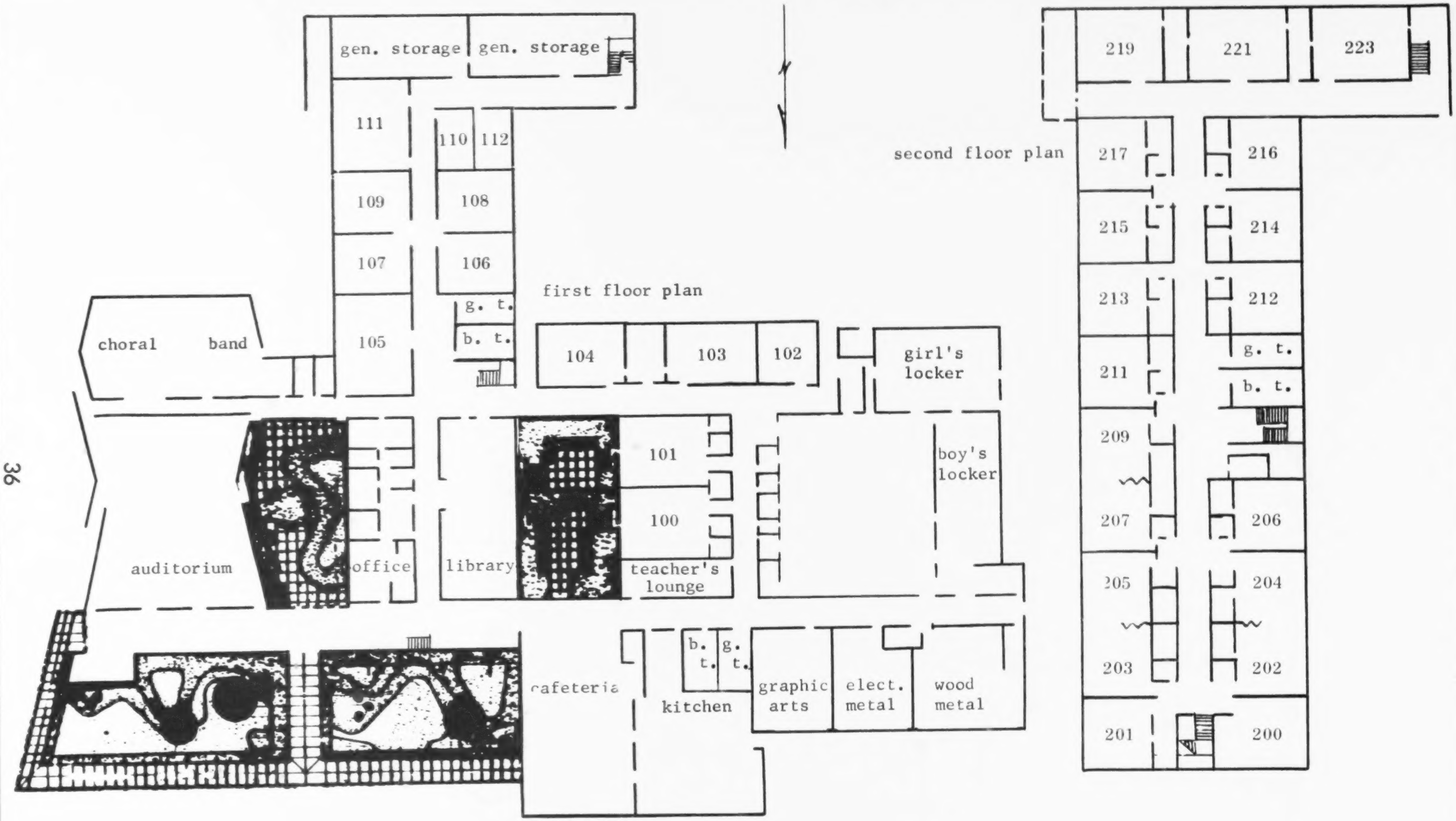
# NOVA HIGH SCHOOL

## ATHLETIC BUILDING



## NOVA HIGH SCHOOL

ADMINISTRATION BUILDING



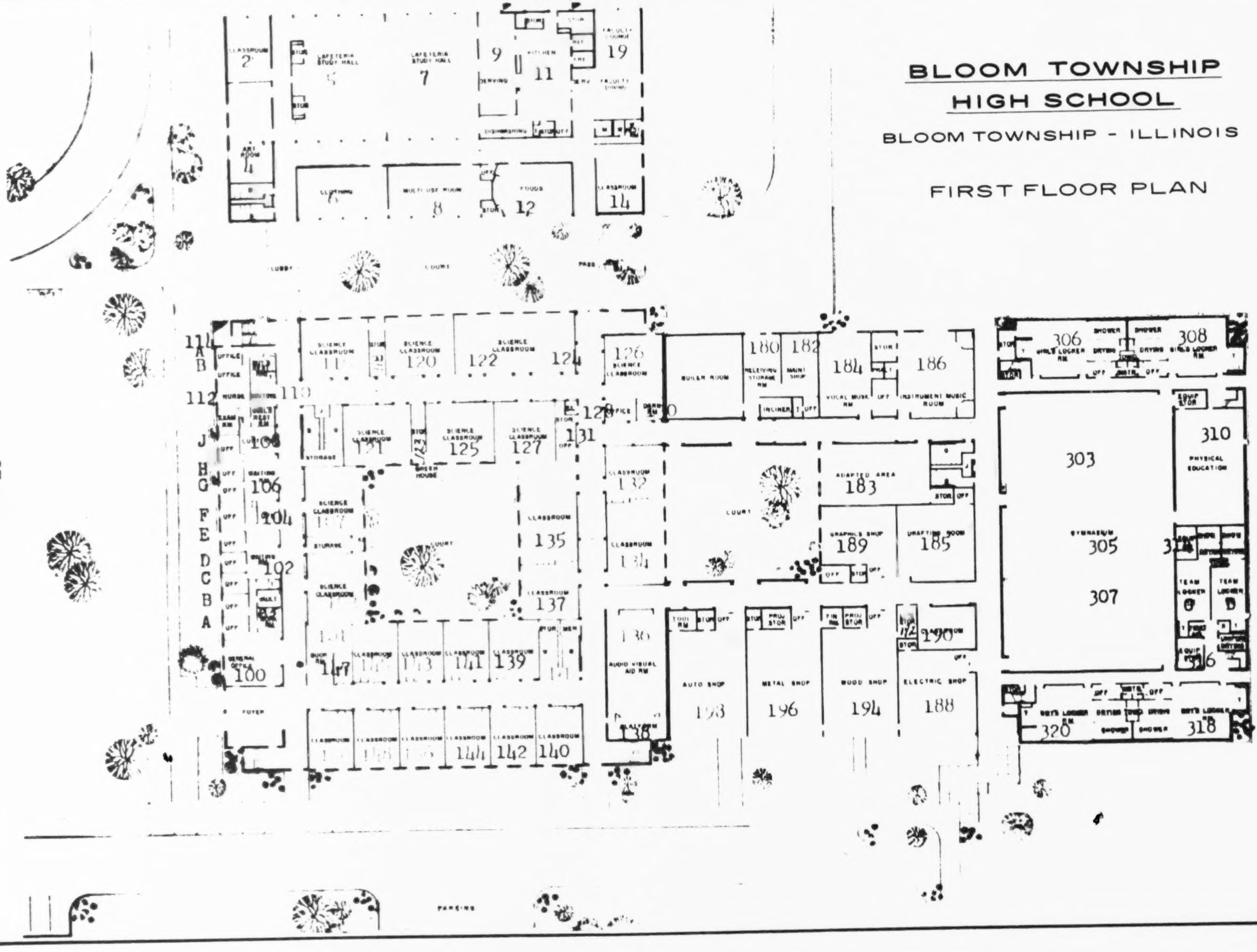
## FRANK R. STARBUCK JUNIOR HIGH SCHOOL

RACINE , WISCONSIN

# BLOOM TOWNSHIP HIGH SCHOOL

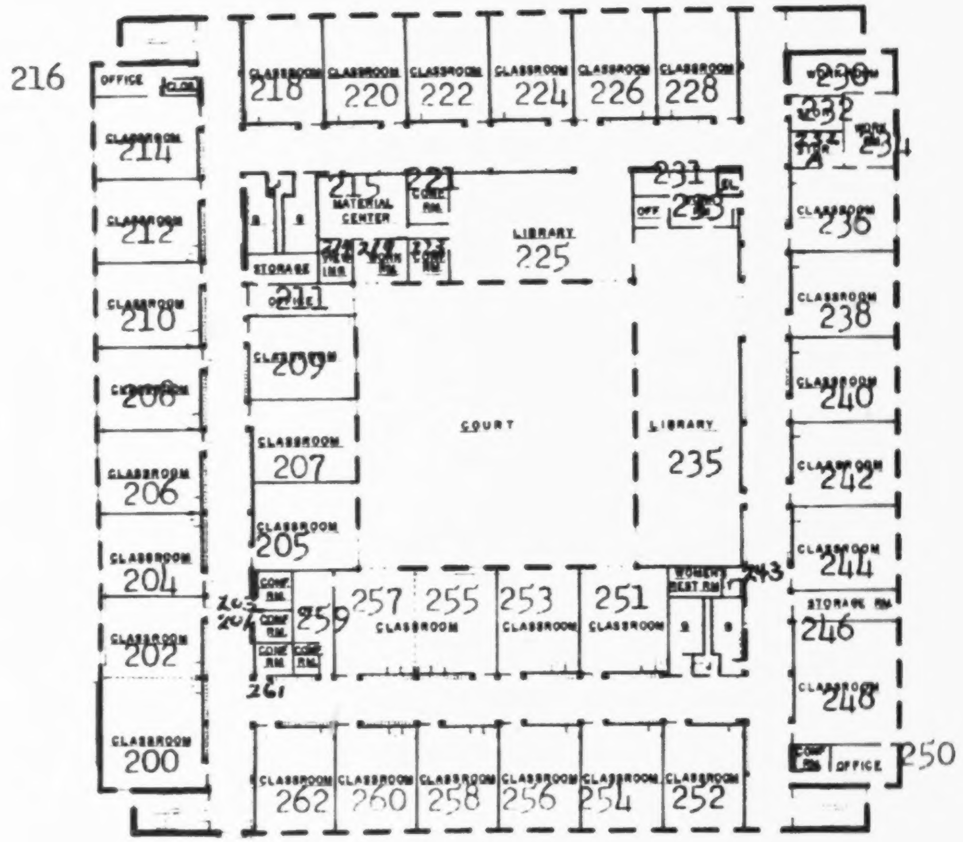
BLOOM TOWNSHIP - ILLINOIS

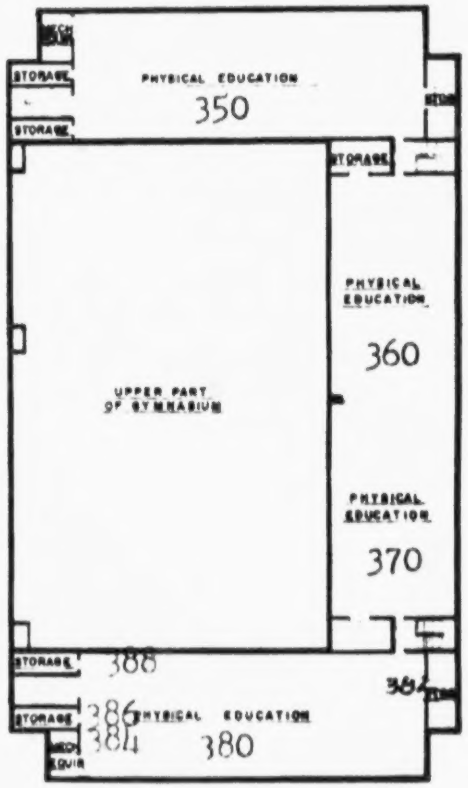
## FIRST FLOOR PLAN

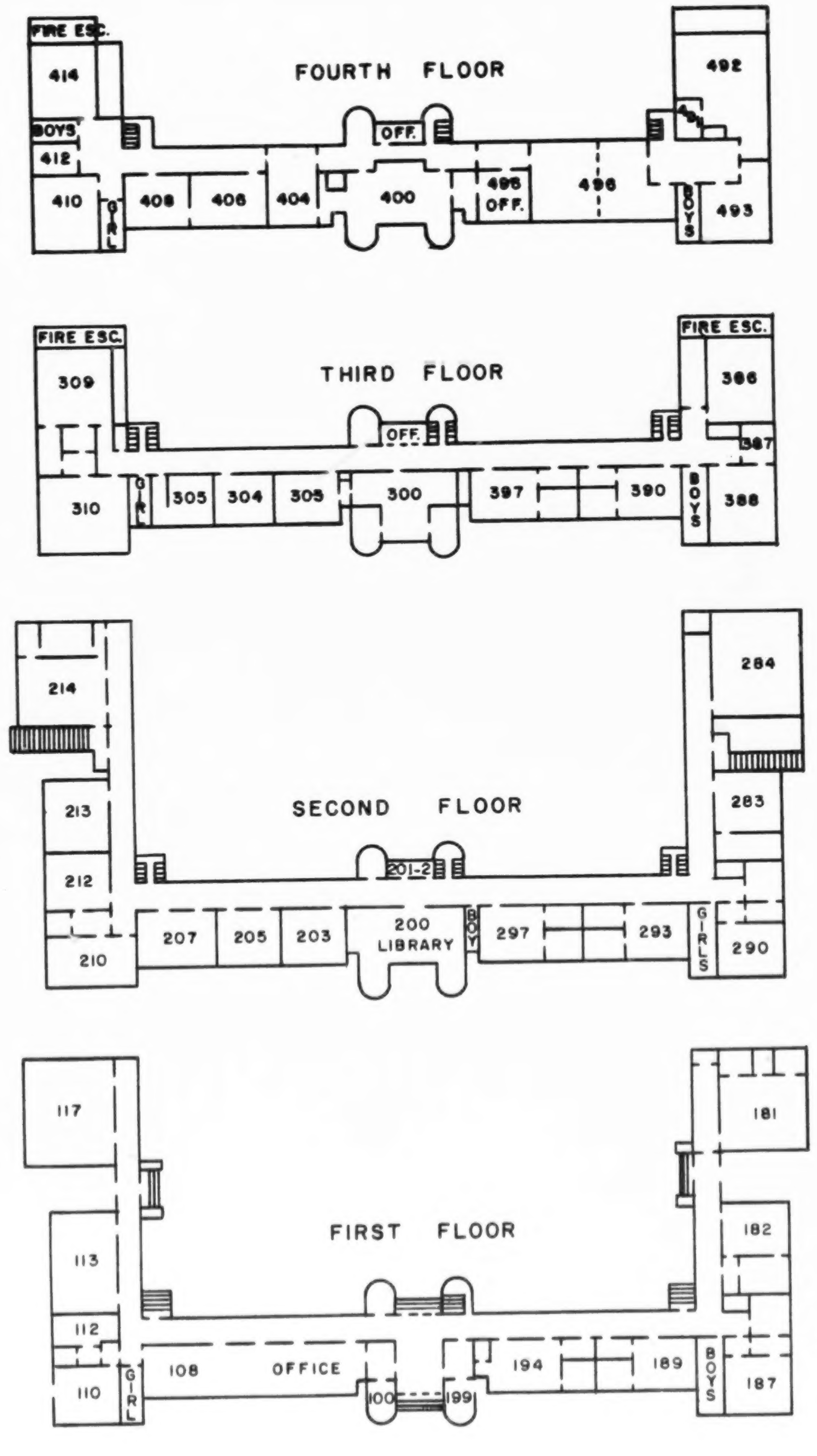


# BLOOM TOWNSHIP
# HIGH SCHOOL

## SECOND FLOOR PLAN



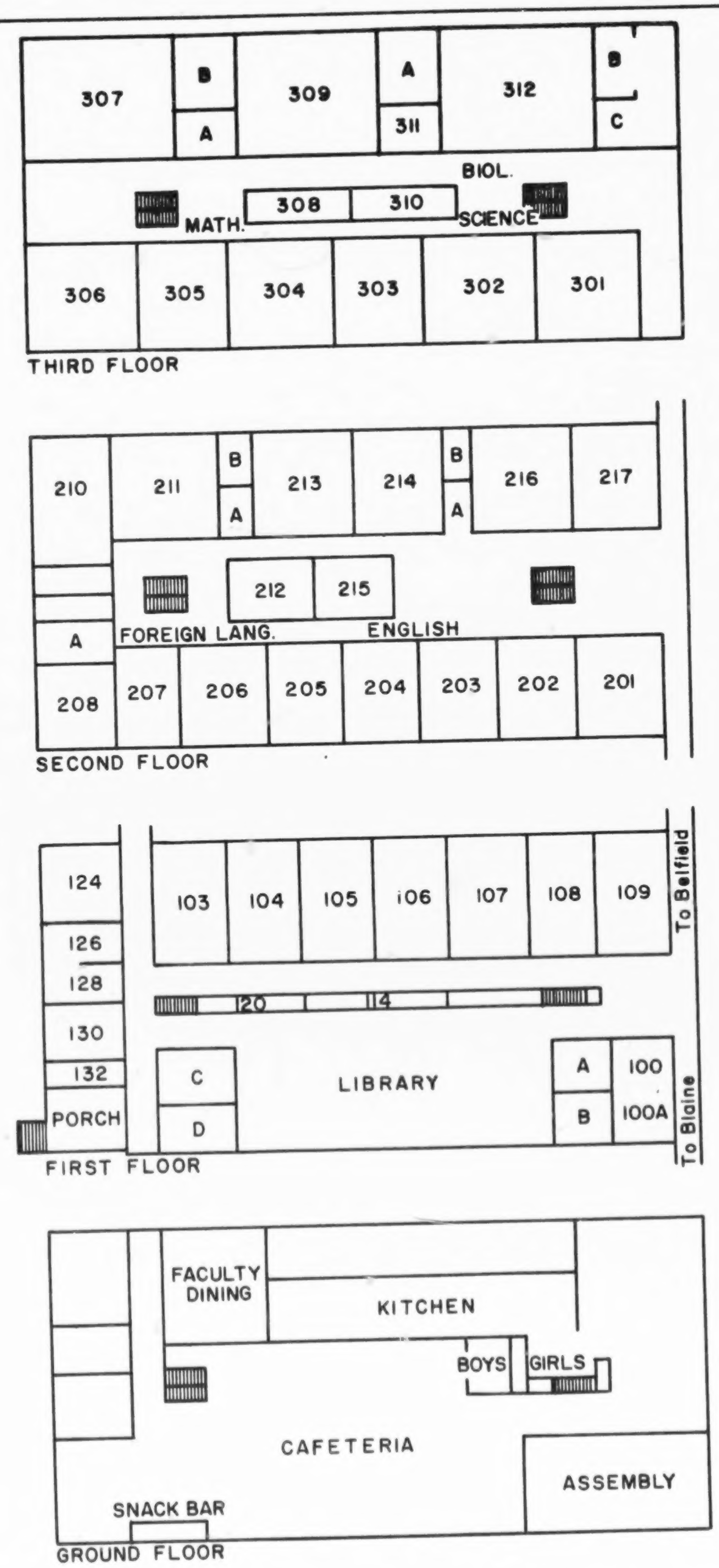




CHICAGO LABORATORY HIGH SCHOOL

BLAINE HALL

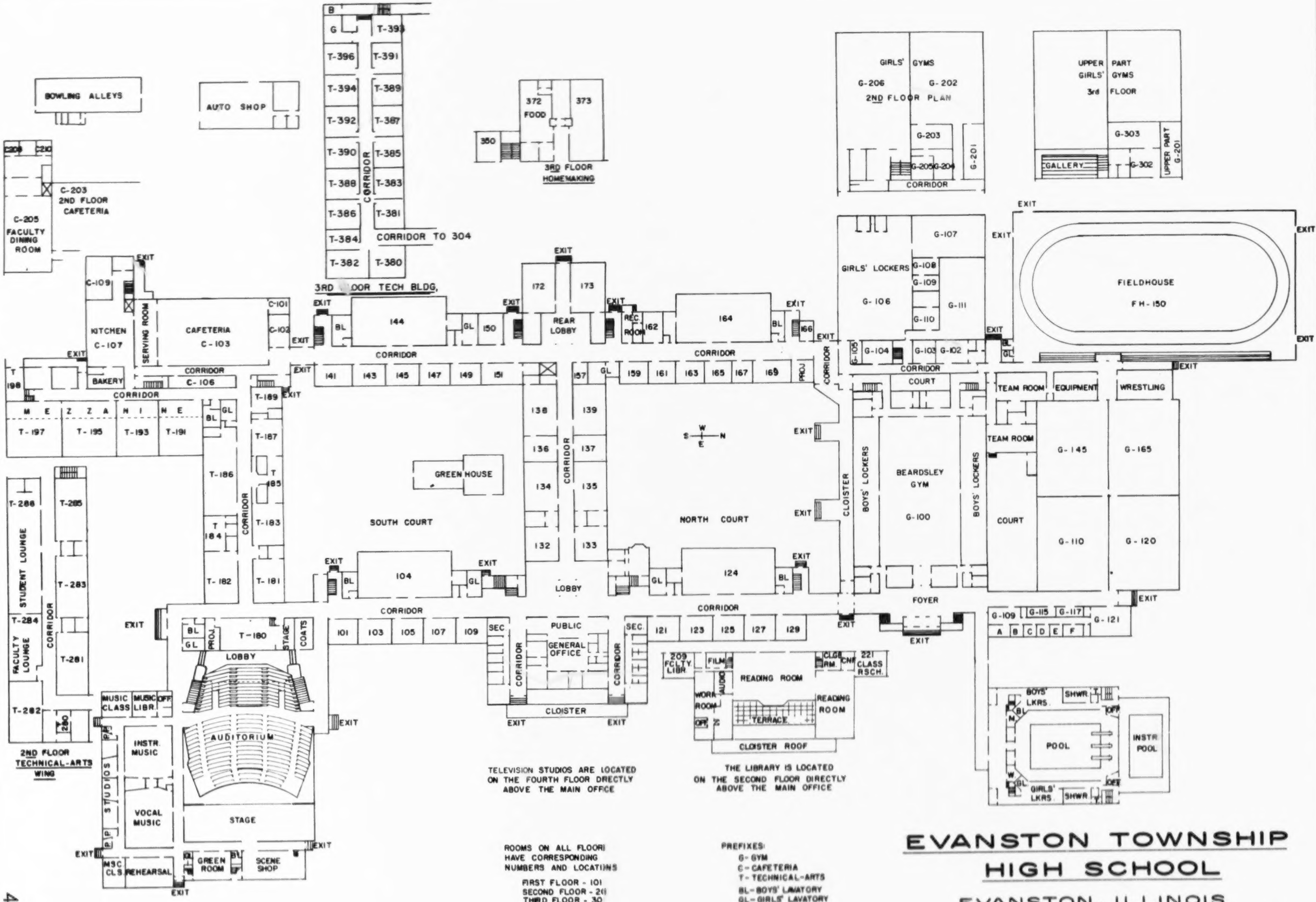
CHICAGO, ILLINOIS



## CHICAGO LABORATORY HIGH SCHOOL

NEW BUILDING

CHICAGO, ILLINOIS



TELEVISION STUDIOS ARE LOCATED
ON THE FOURTH FLOOR DIRECTLY
ABOVE THE MAIN OFFICE

THE LIBRARY IS LOCATED
ON THE SECOND FLOOR DIRECTLY
ABOVE THE MAIN OFFICE

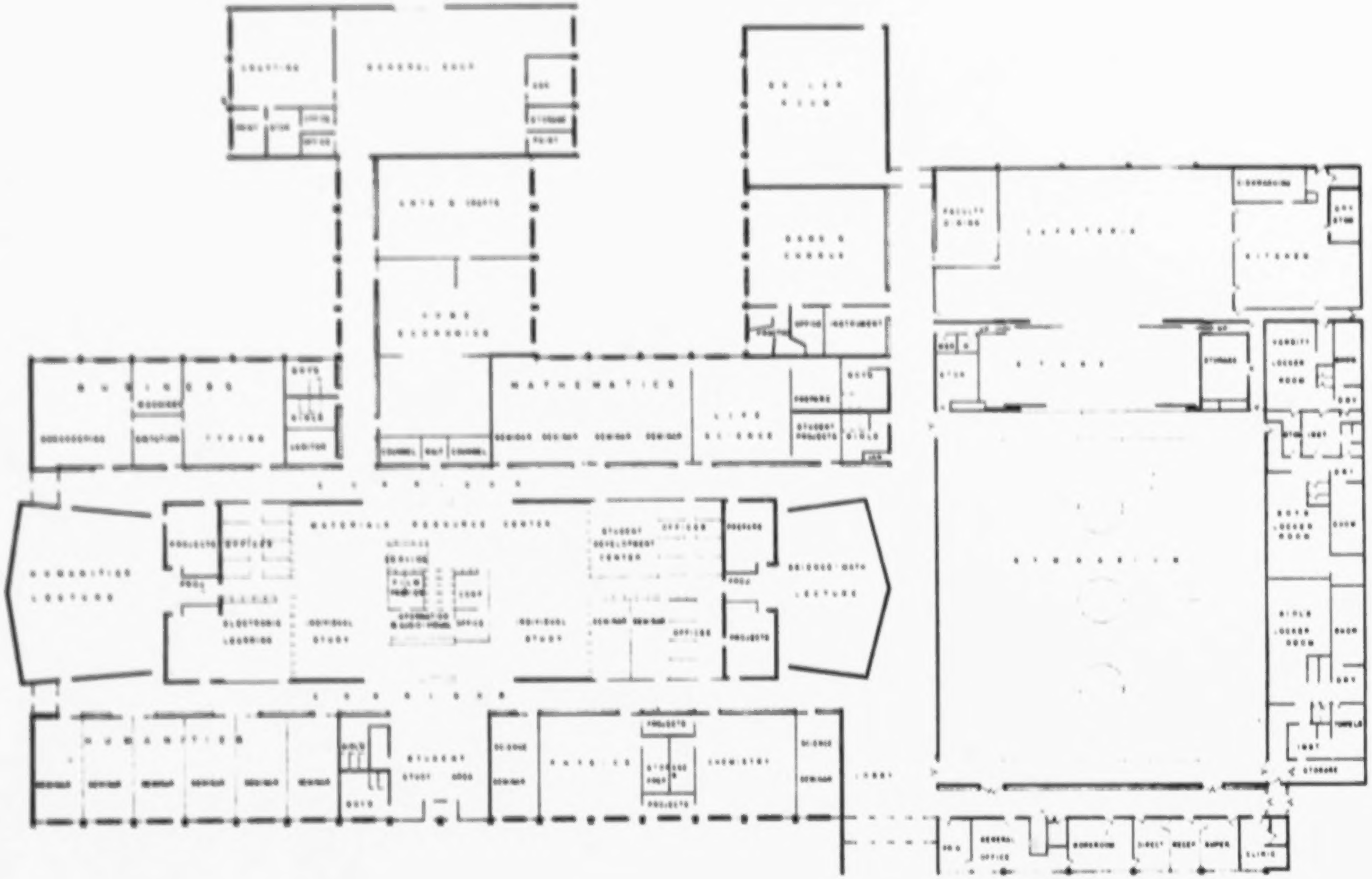
ROOMS ON ALL FLOORS
HAVE CORRESPONDING
NUMBERS AND LOCATIONS

FIRST FLOOR - 101
SECOND FLOOR - 201
THIRD FLOOR - 30

PREFIXES:
G - GYM
C - CAFETERIA
T - TECHNICAL-ARTS
BL - BOYS' LAVATORY
GL - GIRLS' LAVATORY

# EVANSTON TOWNSHIP HIGH SCHOOL

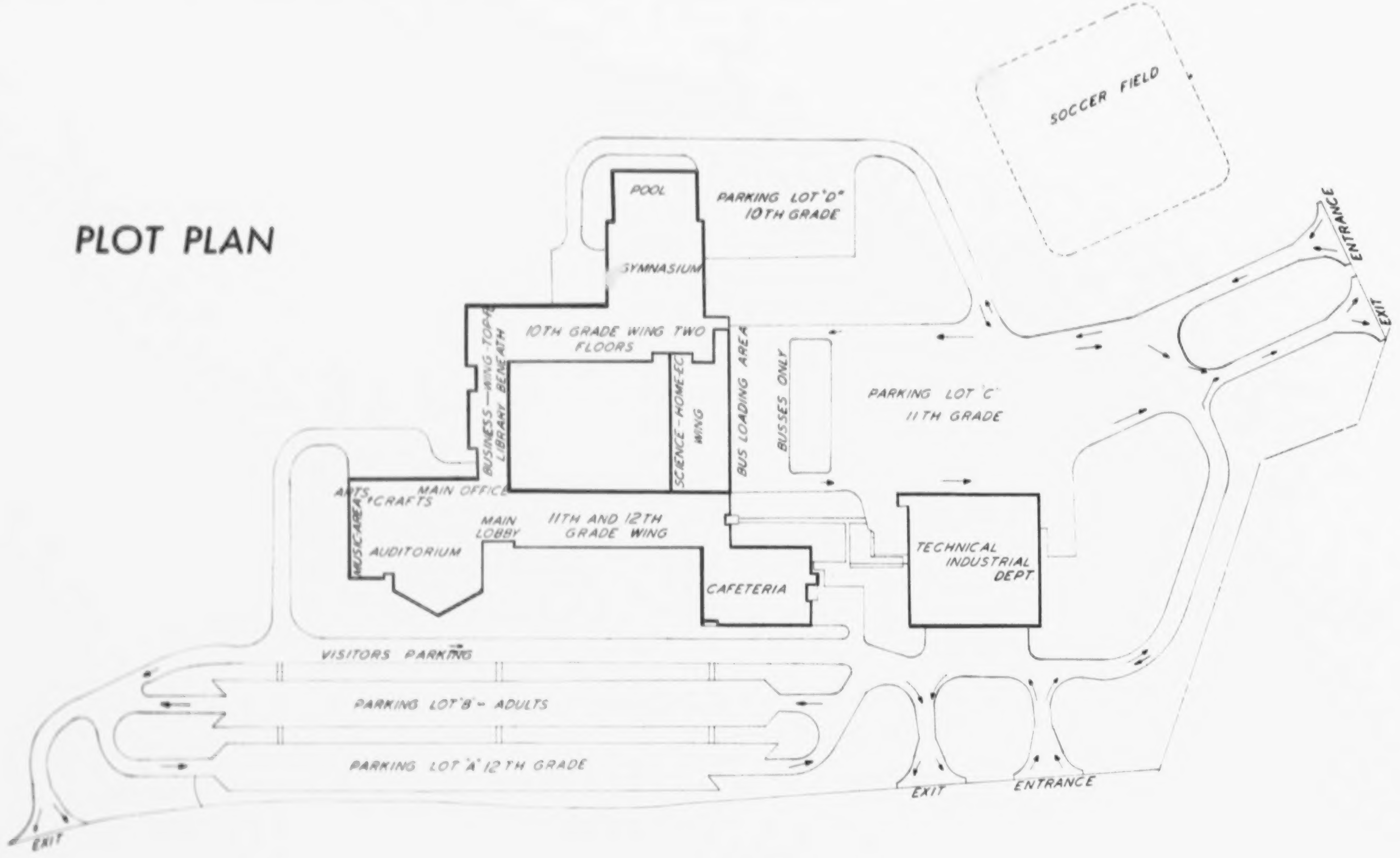
EVANSTON, ILLINOIS



# WISCONSIN HEIGHTS HIGH SCHOOL

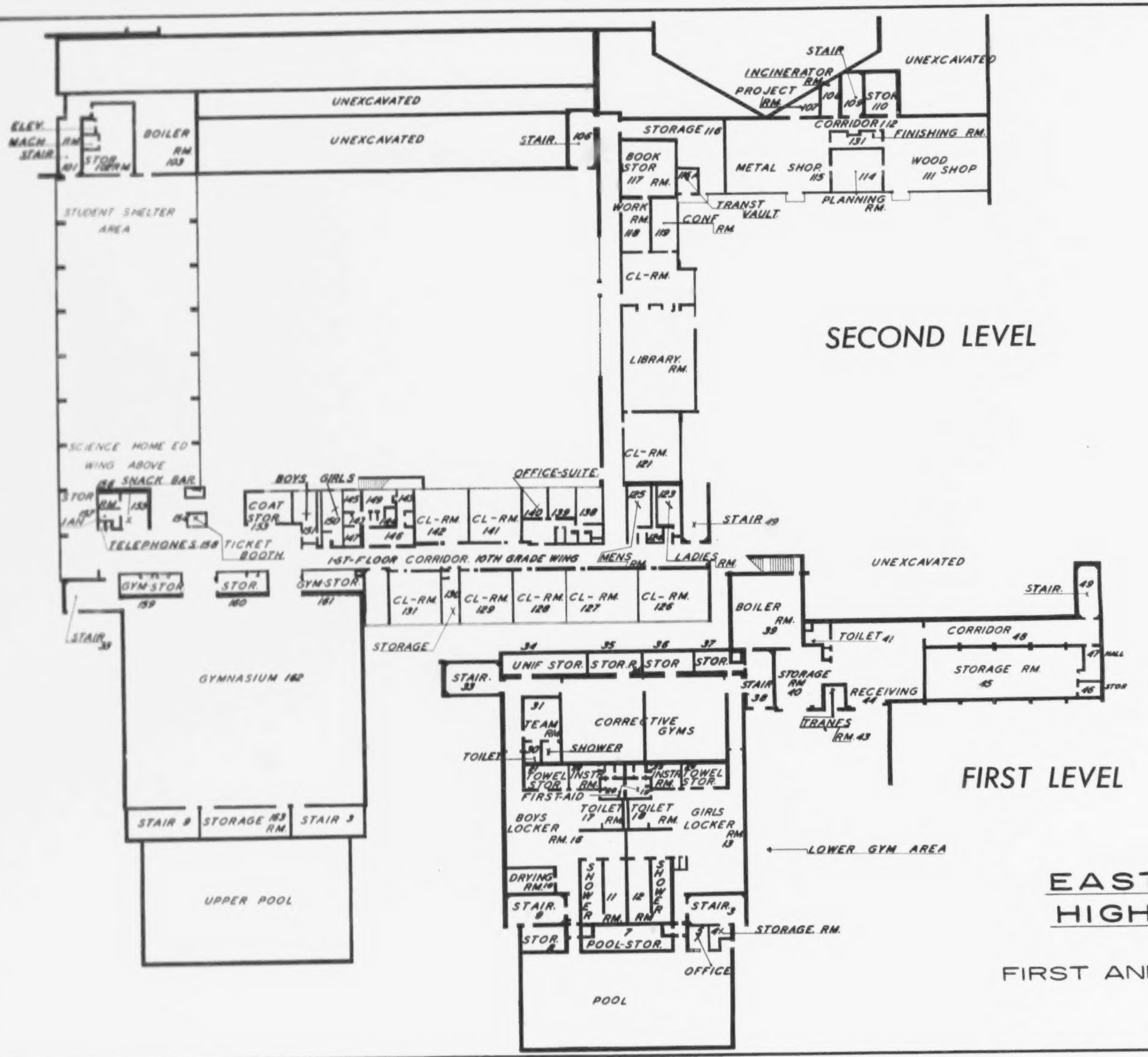
MAZOMANIE, WISCONSIN

# PLOT PLAN



## EASTON AREA HIGH SCHOOL

EASTON, PENNSYLVANIA

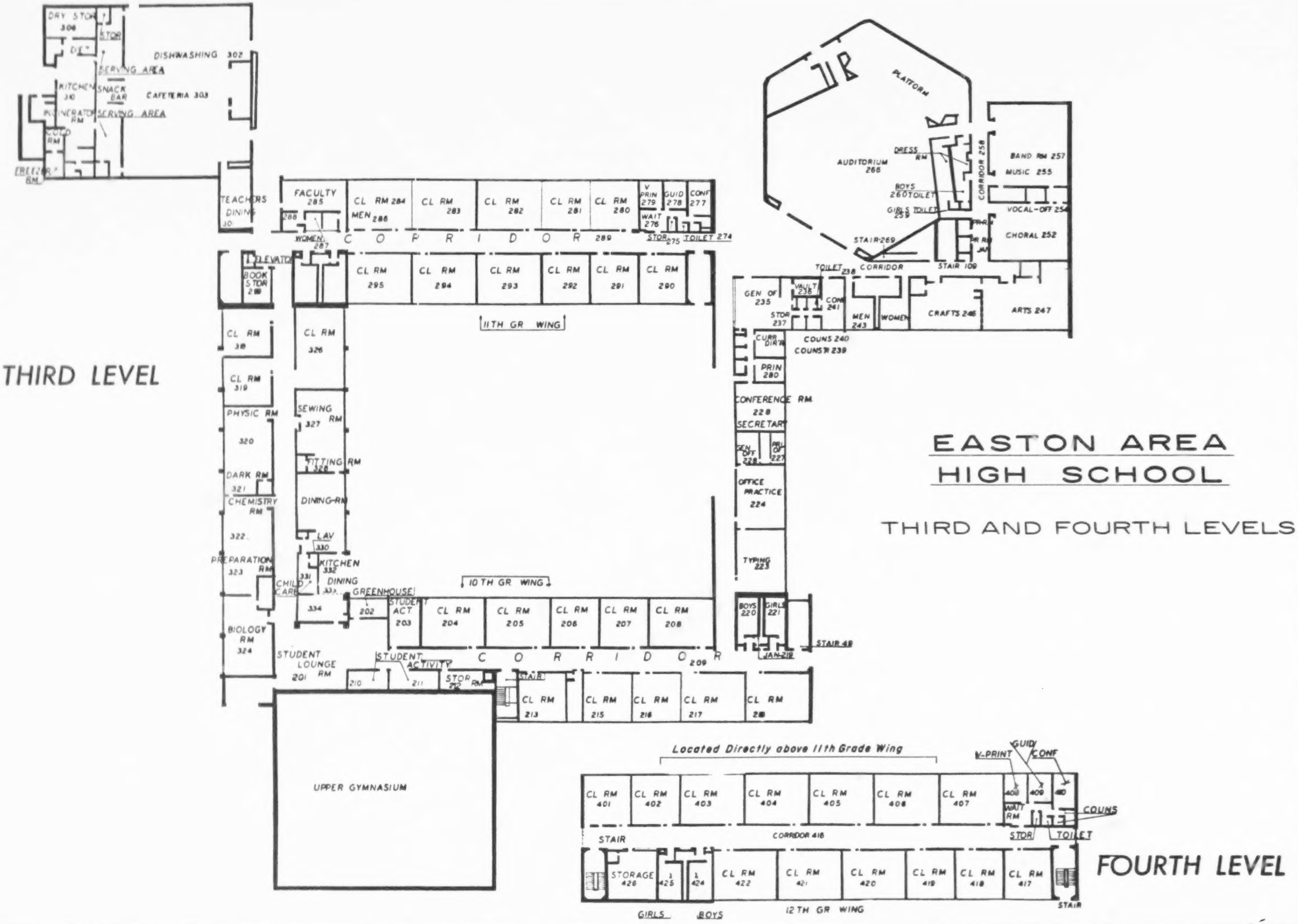


# EASTON AREA HIGH SCHOOL

FIRST AND SECOND LEVELS

# EASTON AREA HIGH SCHOOL

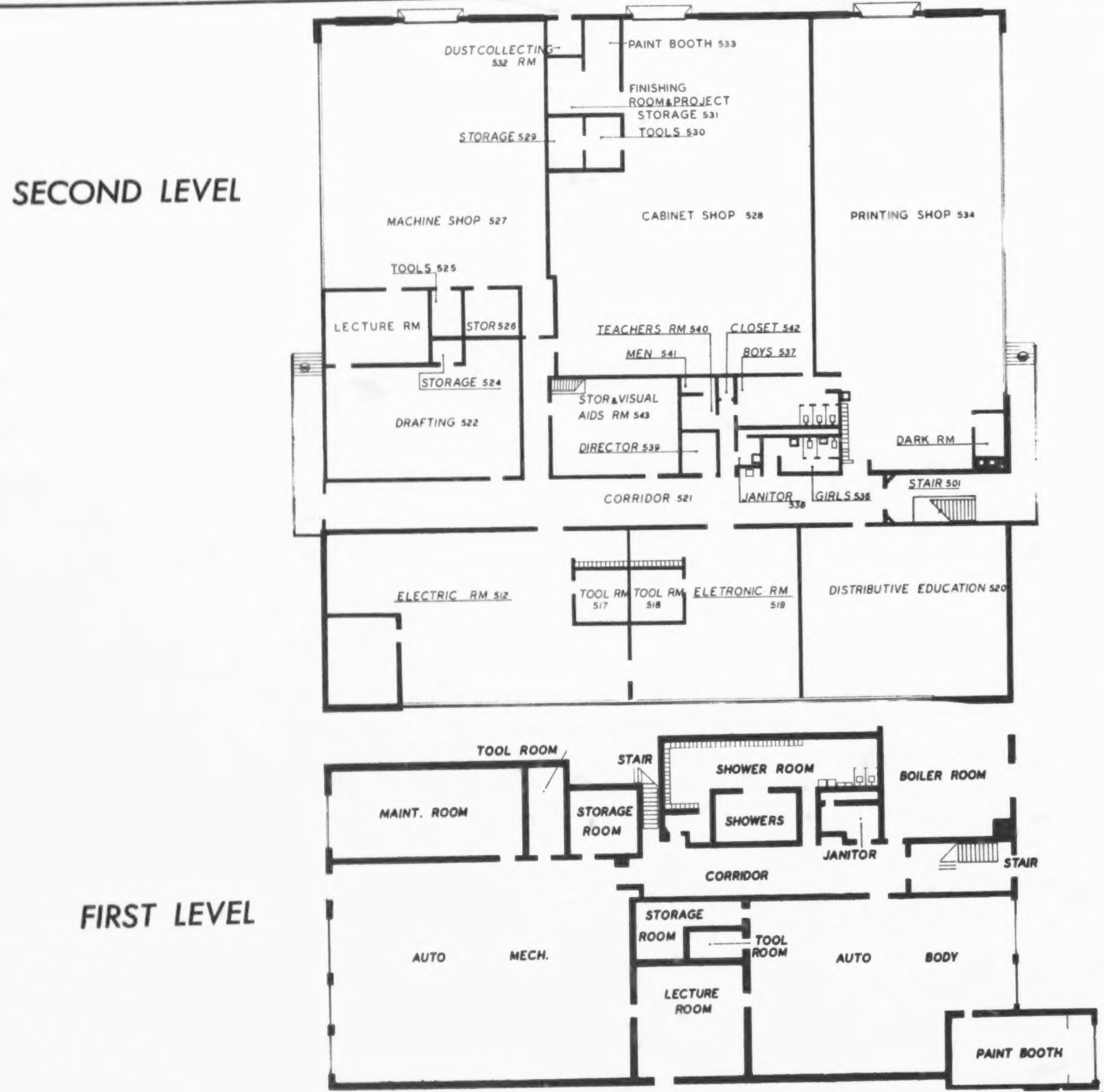
## THIRD AND FOURTH LEVELS



# EASTON AREA HIGH SCHOOL

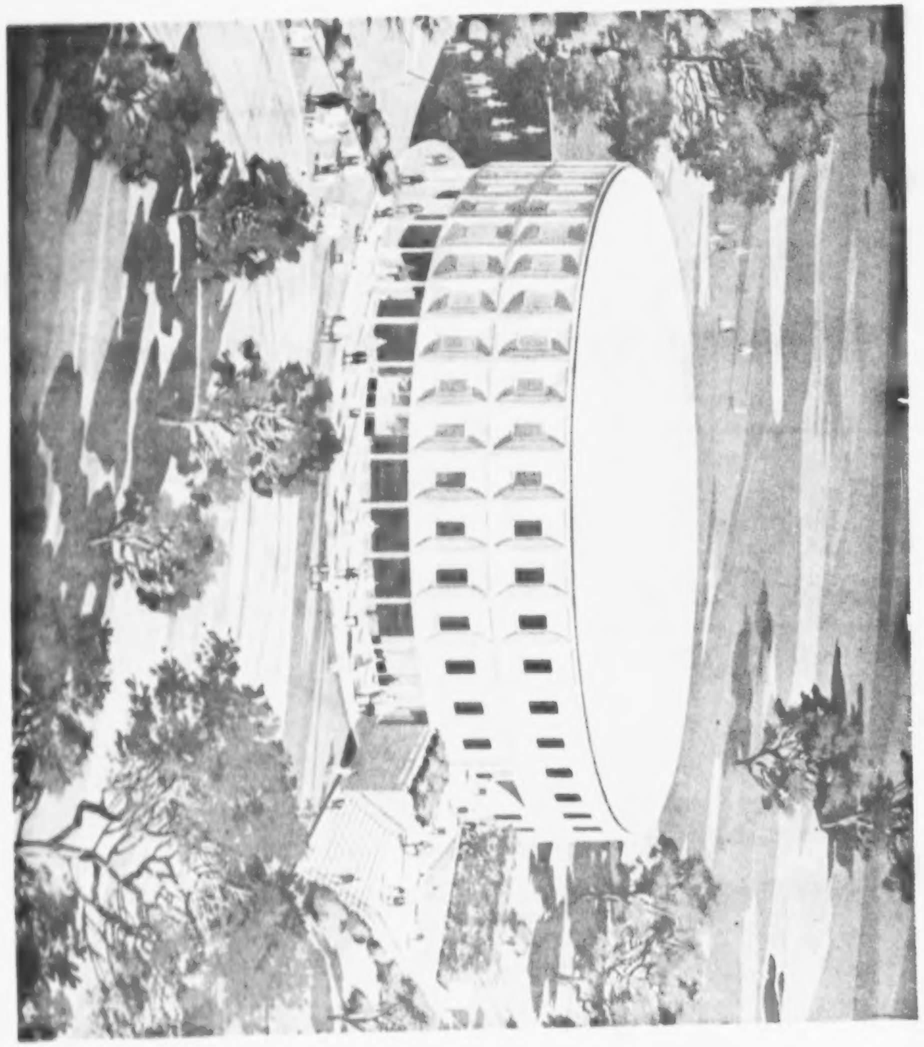
## TECHNICAL-INDUSTRIAL BUILDING

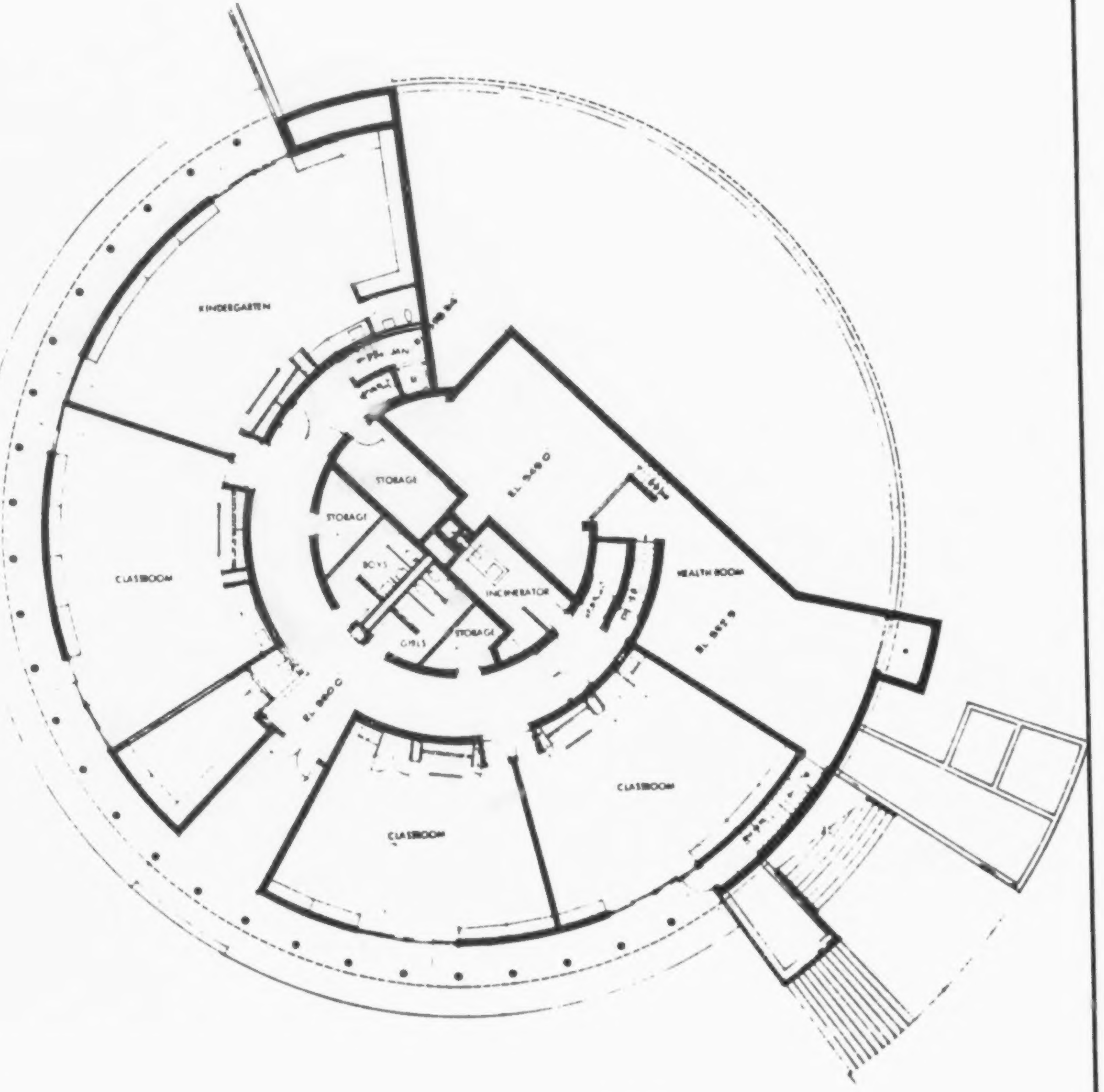
FIRST AND
SECOND LEVELS



# BUSHEY DRIVE ELEMENTARY SCHOOL

MONTGOMERY COUNTY, MARYLAND

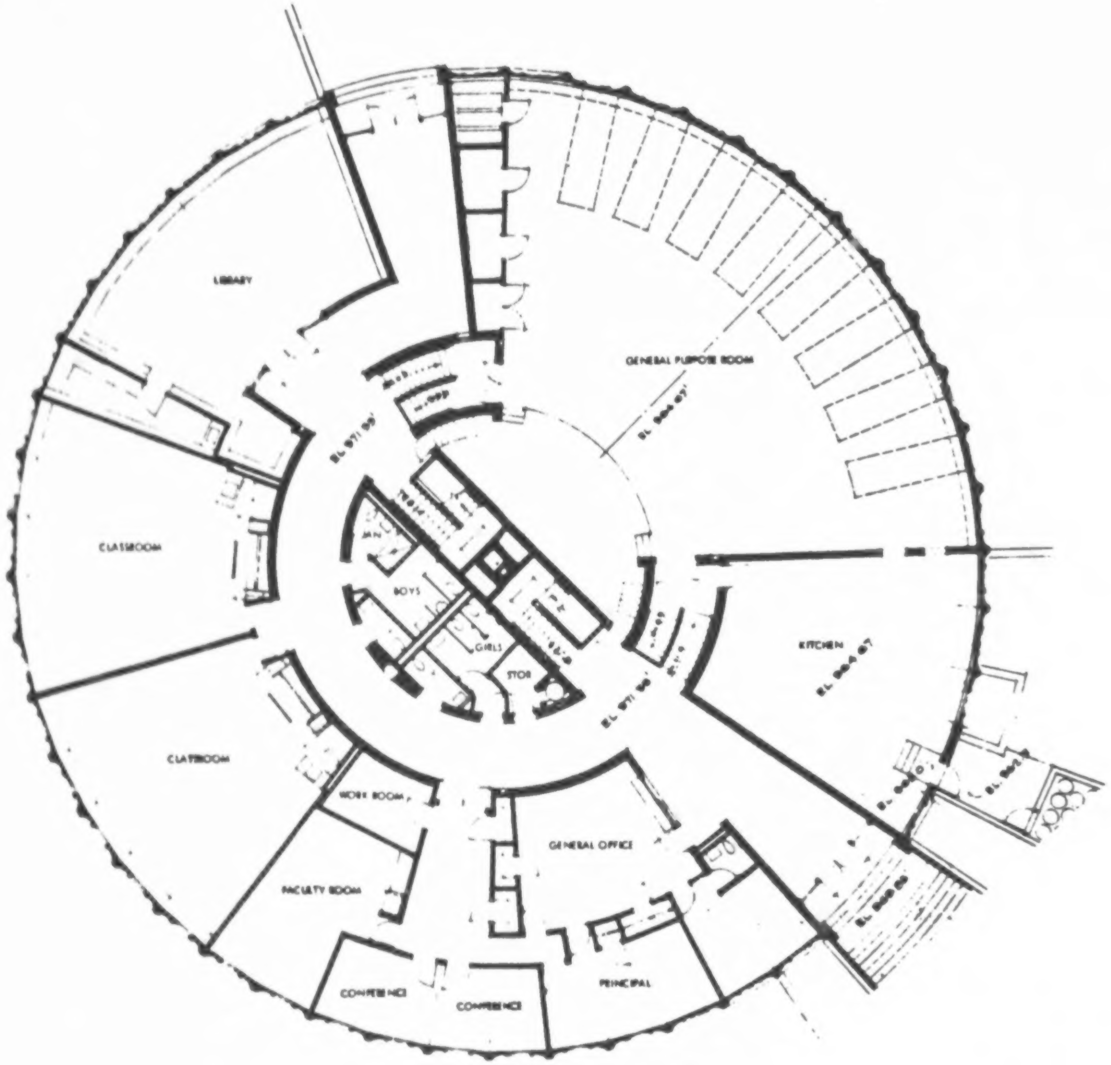




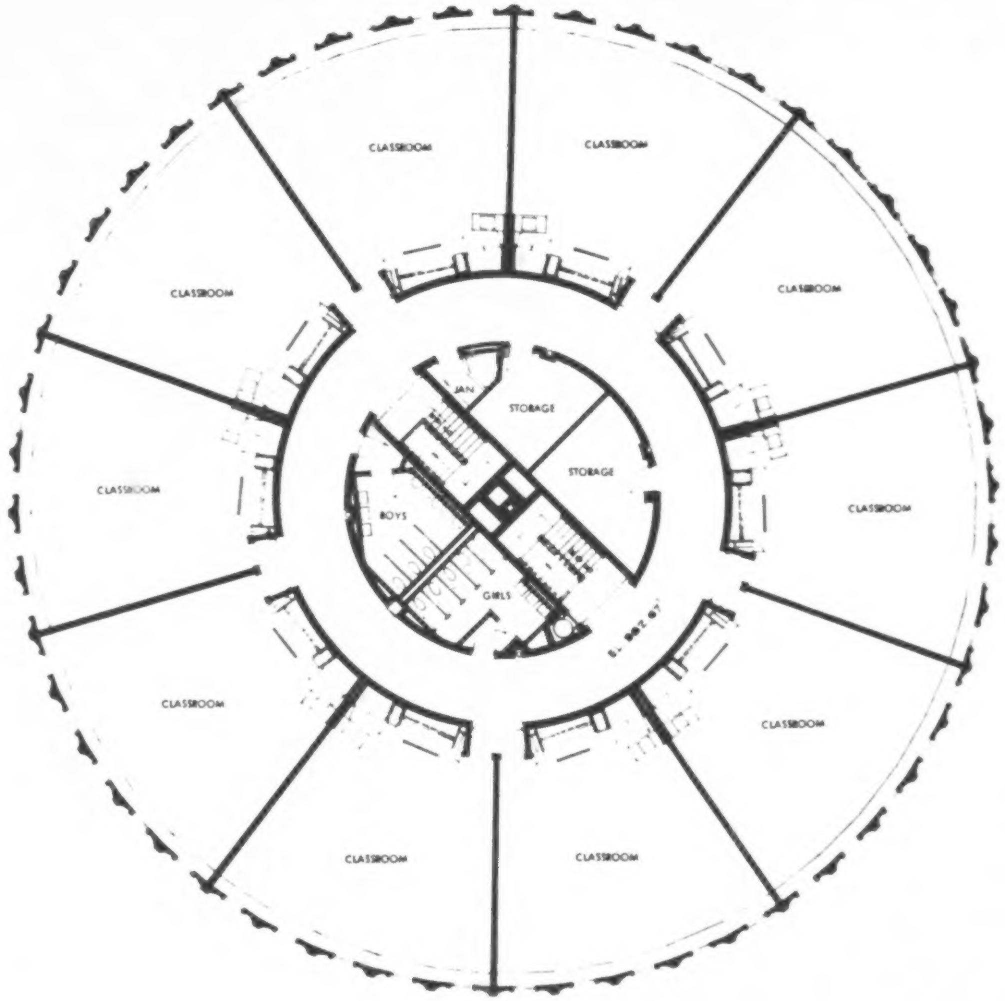
FIRST FLOOR

# BUSHEY DRIVE ELEMENTARY SCHOOL

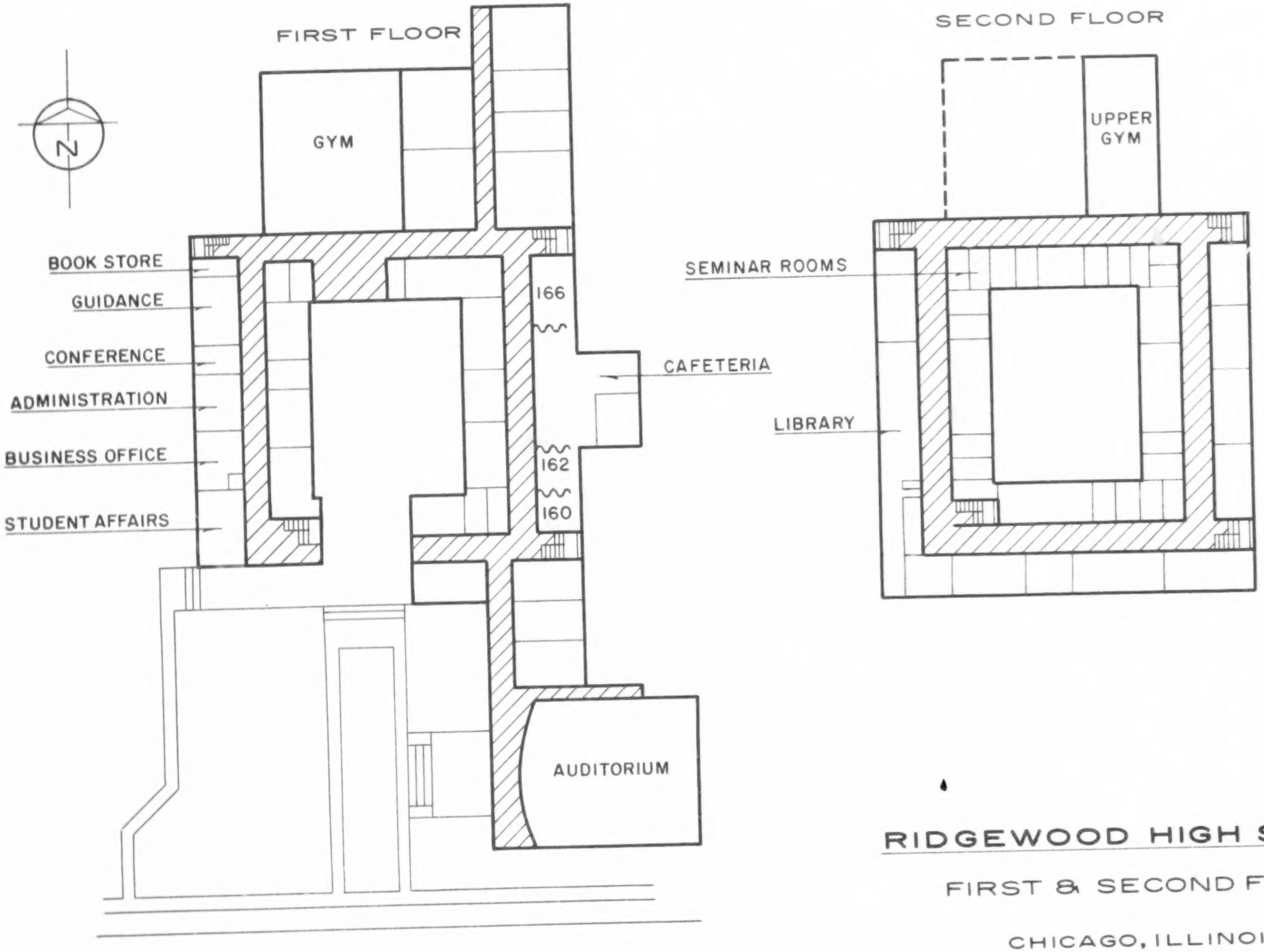
## SECOND & THIRD FLOORS



SECOND FLOOR



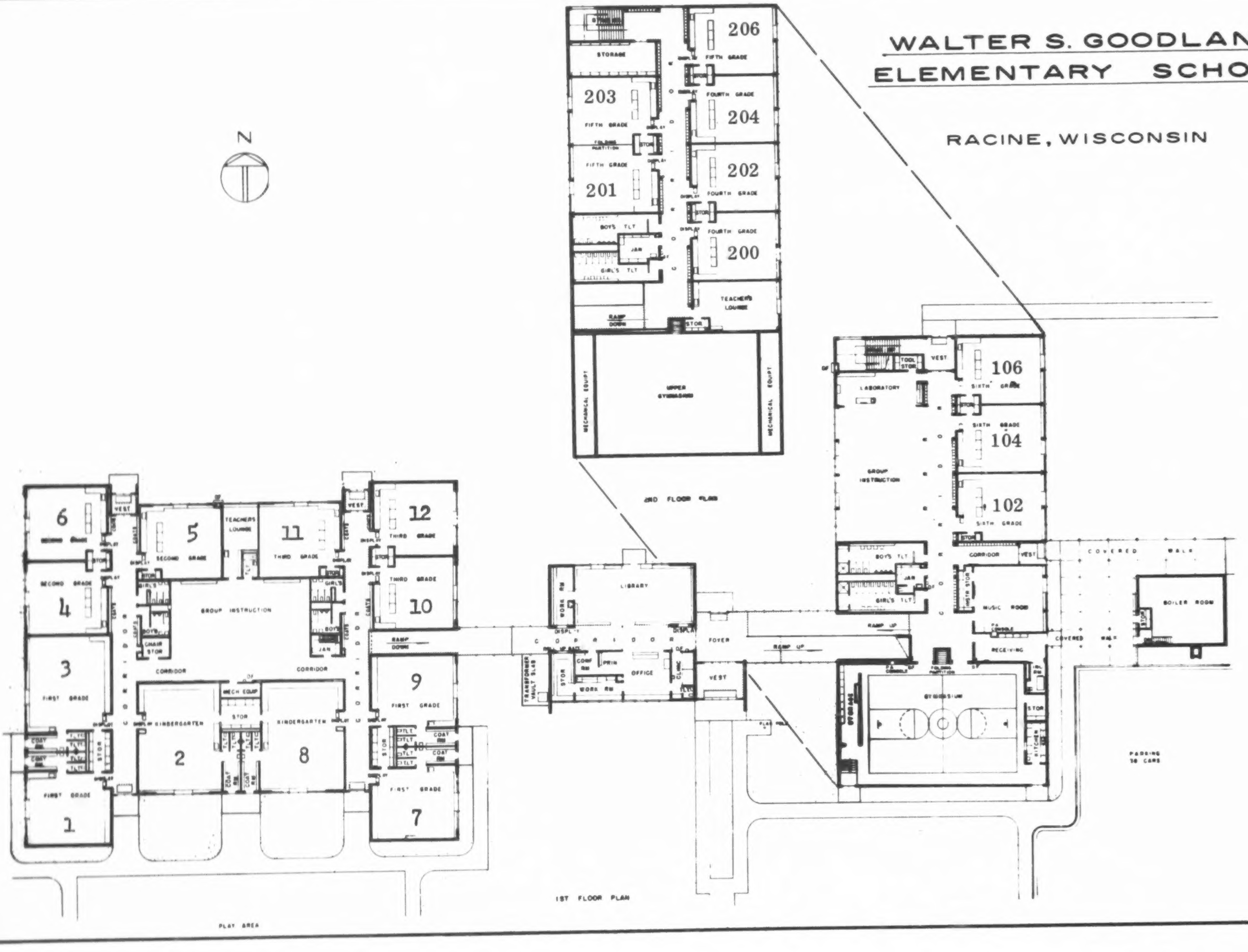
THIRD FLOOR



RIDGEWOOD HIGH SCHOOL
FIRST & SECOND FLOORS
CHICAGO, ILLINOIS

# WALTER S. GOODLAND ELEMENTARY SCHOOL

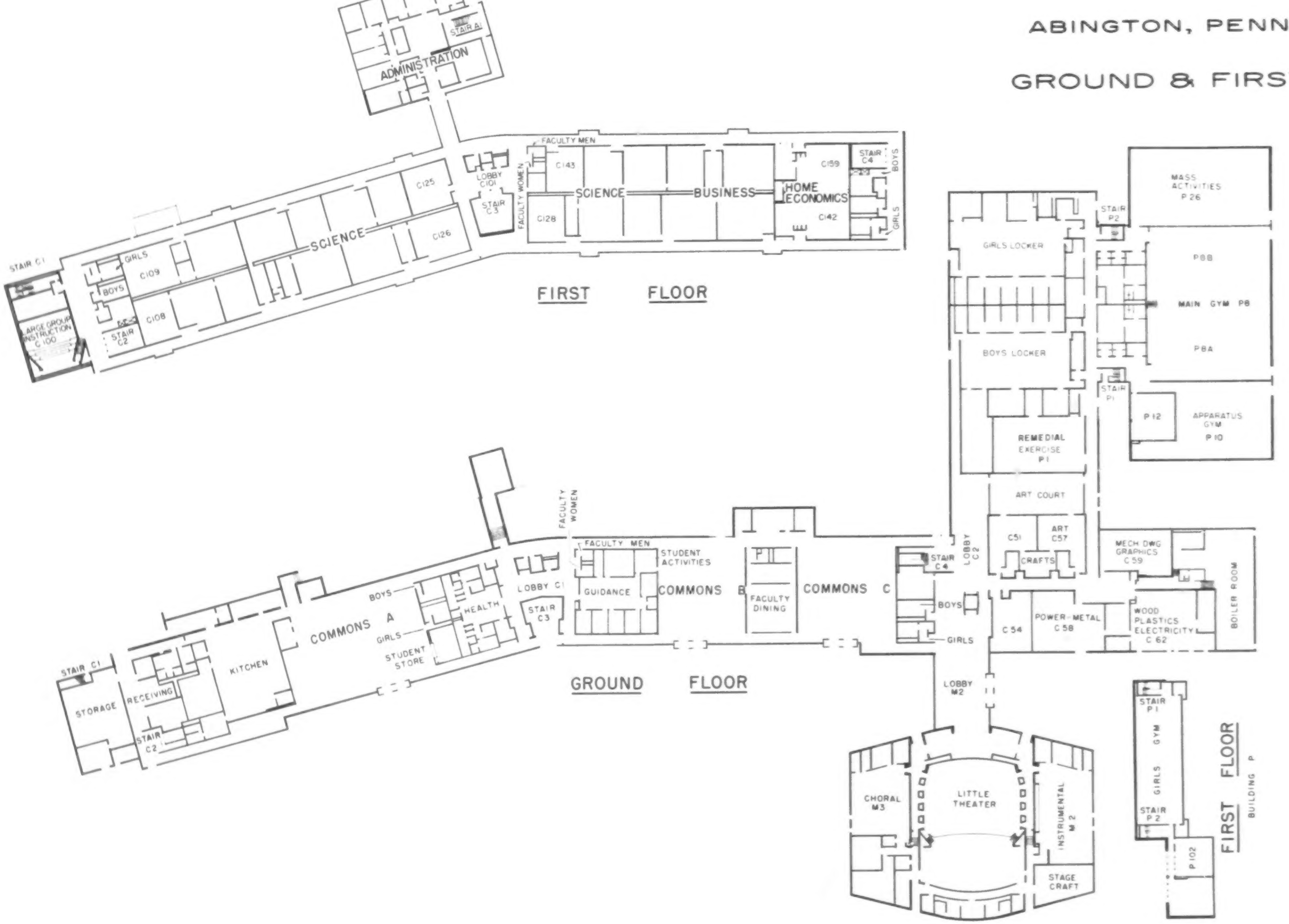
RACINE, WISCONSIN



# ABINGTON HIGH SCHOOL-
# NORTH CAMPUS

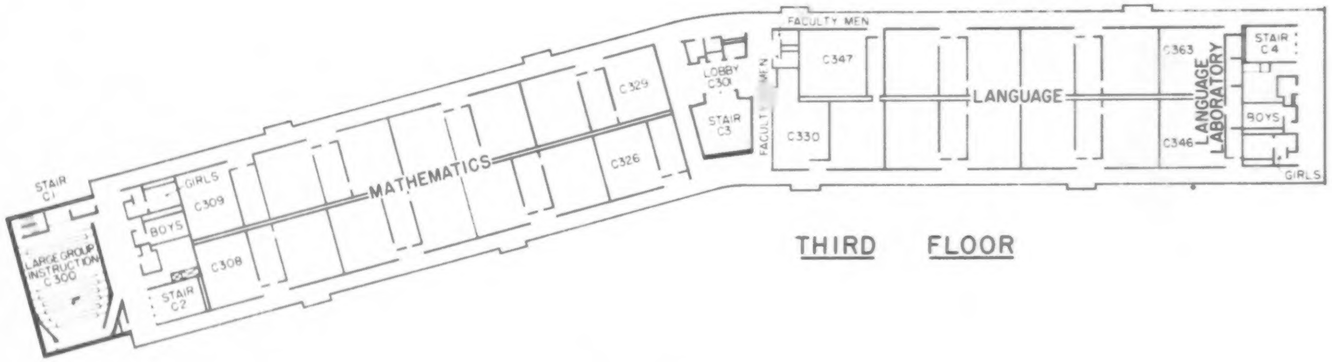
ABINGTON, PENNSYLVANIA

GROUND & FIRST FLOORS

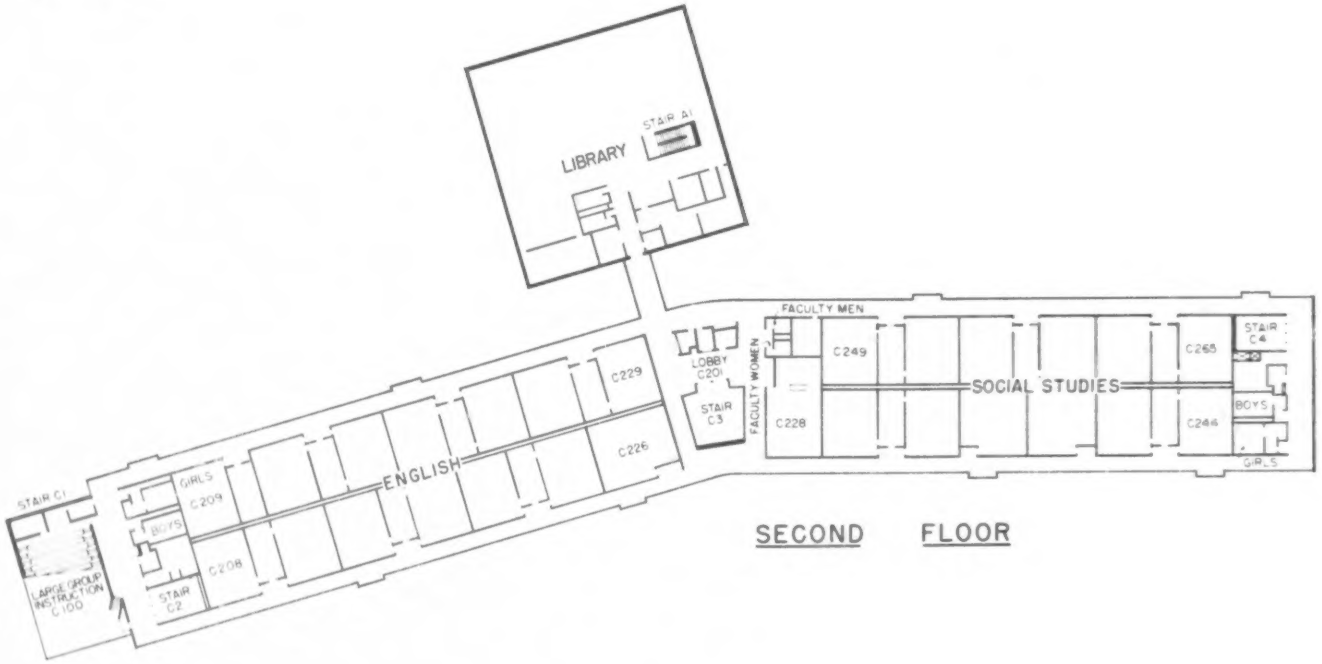


# ABINGTON HIGH SCHOOL-
# NORTH CAMPUS

## SECOND & THIRD FLOORS



THIRD FLOOR

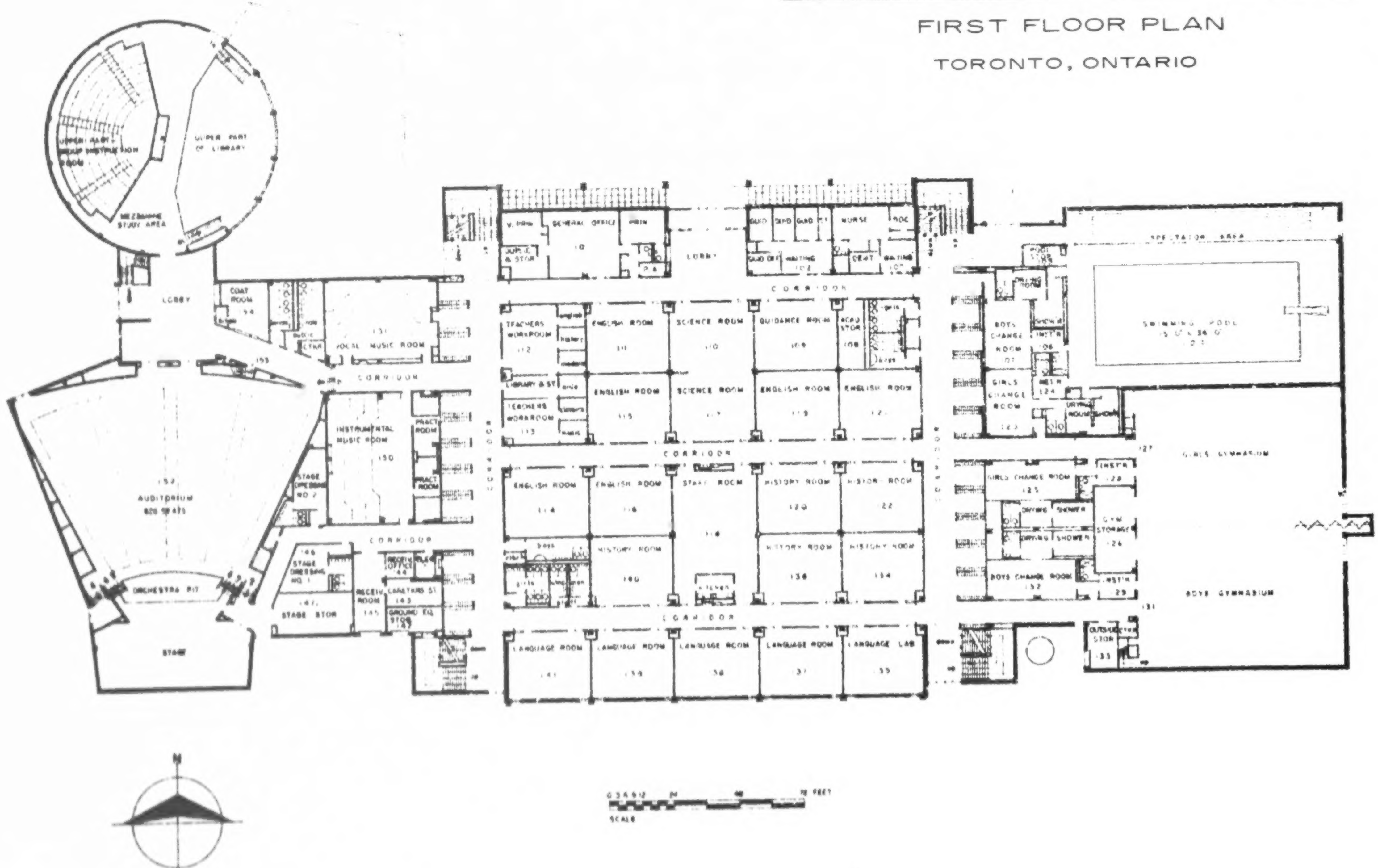


SECOND FLOOR

# MONARCH PARK HIGH SCHOOL

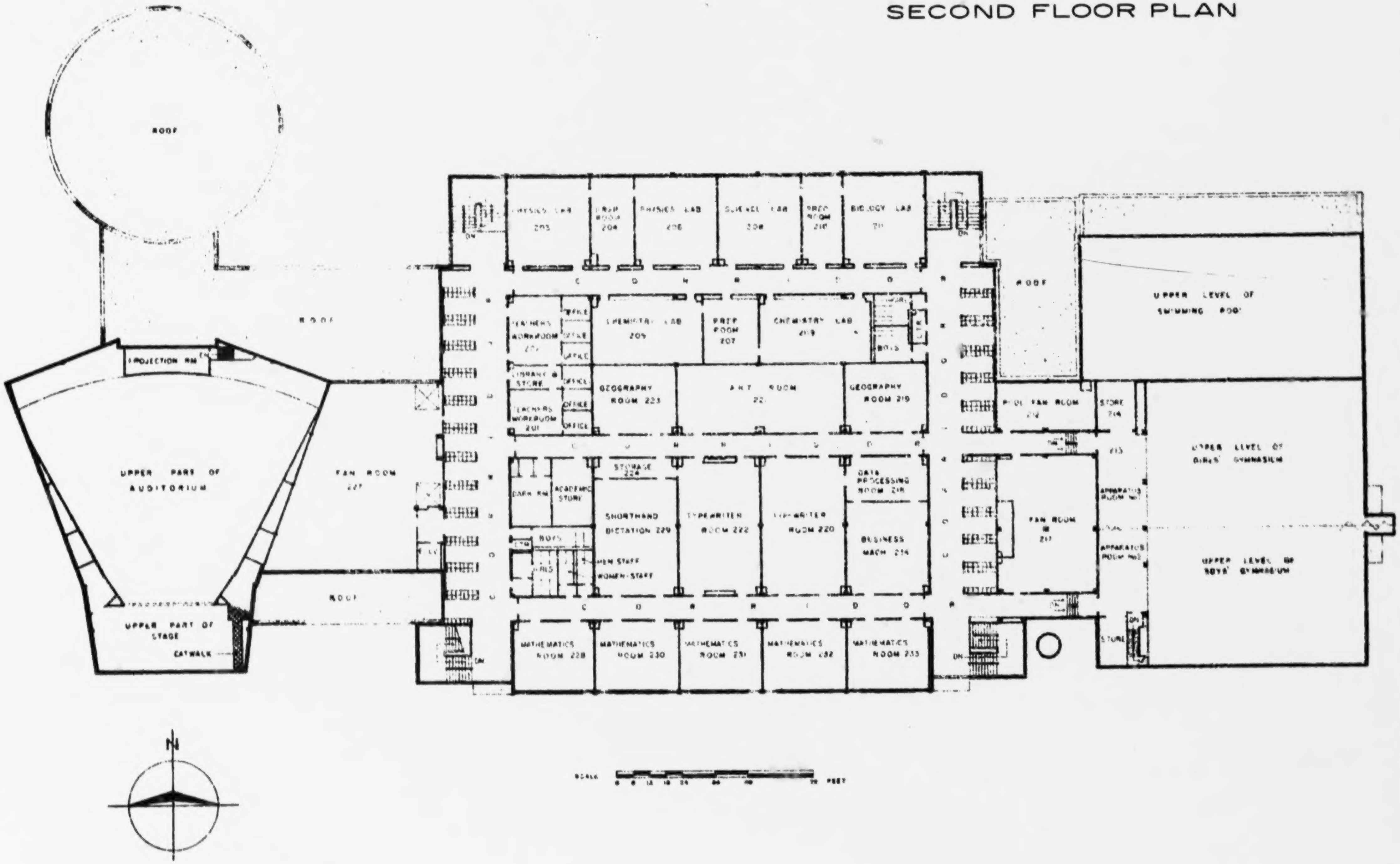
## FIRST FLOOR PLAN

TORONTO, ONTARIO



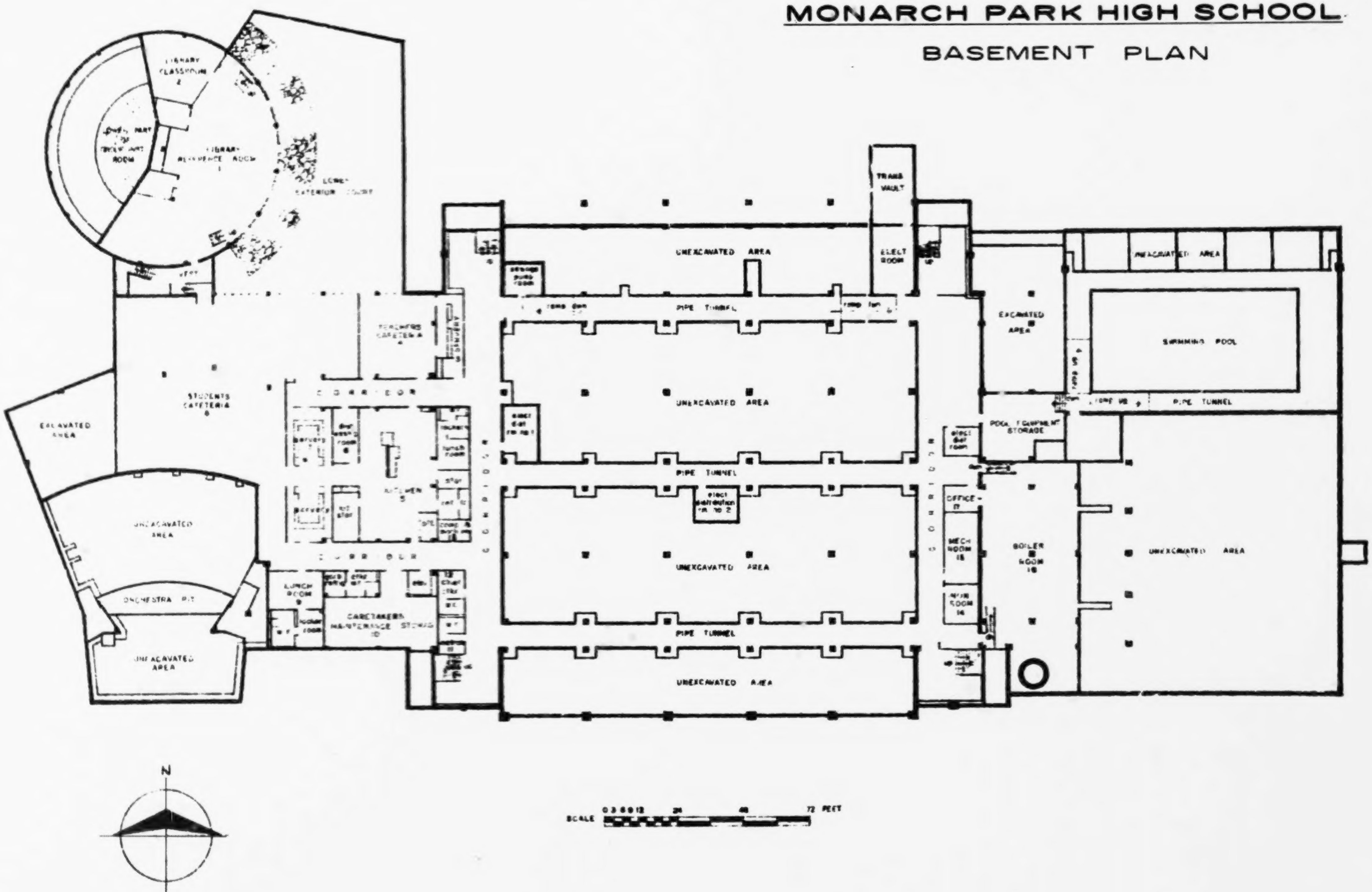
# MONARCH PARK HIGH SCHOOL

## SECOND FLOOR PLAN



# MONARCH PARK HIGH SCHOOL

## BASEMENT PLAN



# CHAPTER 8

## SOME ODDS AND ENDS

While investigating team teaching, I was able to observe several other interesting aspects involving educational change. Although these have only an indirect application to team teaching they are presented here as a matter of interest.

**INNOVATION:**

The term, innovation, has great impact in the United States and Canada. It was heard constantly during my travels. The superintendents who were gathered together in the Chicago area for a three-day seminar on "Change in the Public School" under the direction of Dr. Luvern Cunningham and the Midwestern Administration Association, largely deplored anyone using innovations as "watch-fobs". Their main concern at this meeting was with the change agents in their systems. The consensus was that some superintendents tended to wear spectacular innovation as a watch-fob for public relations rather than because of an earnest desire to change their systems. They were advised by the speakers at the conference that administration should be trained to adapt to change rather than try to control it tightly.

* * *

One superintendent was describing a local innovation in reading that was being pressed on his system by the public. The reading innovation was only a gimmick in reality, but he could not convince his public of this. Many agreed that he should allow it into one of his schools and inform the public that it was being carefully researched until the public hue and cry died down.

* * *

Dr. Dan Lortie, a Chicago sociologist, advised the group of superintendents to allow more of their educators to get away and view other teachers in a detached fashion. He suggested two areas of detachment — place and time. The teachers could get away to other continents, such as Africa, to view problems that are basic to education and to attend universities abroad to study their histories of education. He also suggested that role-playing among groups — board members through to teachers — will help with inter-communication. He emphasized that an educator must be able to break out of his role and get away in order to change.

He also pointed out that late adopters are the ones with staying power and cautioned the superintendents against being too hasty in allowing early adoptions — better that a model school should contain the innovations until the system was able to absorb them.

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Dr. Lortie and Dr. Hencley, both consultants to one of the seminars, cautioned against the charismatic leadership or "personality cult" that may be causing change. Charismatic leadership operates inversely to the size of the school or the system — especially if the leader is a change agent. What happens if the charismatic individual is taken away from the scene of the action? This writer has become more and more aware of the dangers inherent in charisma, and knowing that it operates in many team schools, he wonders how it may be controlled.

How much of it should be controlled? Is a leader's future advancement enhanced or retarded because of charisma? Are teachers and students blinded by a kind of "personality cult" that is damaging to them in some fashion? In any event, changes such as team teaching, coming about through charismatic leadership, must be very carefully watched and in some measure controlled by those officials responsible to the public.

* * *

Dr. Art Gallaher, an anthropologist from Kentucky, gave superintendents food for thought when he suggested that our superintendents should serve more as a balancing force in administration and play the role of the advocate less. He suggested that the principal be the advocate for change and that certain schools be declared experimental and allowed to make recommendations to central administration and school boards. He also recommended that superintendents be able to offer several alternatives to school boards and make them take responsibility for change because they do, in fact, represent society. His conclusion was that innovations are not adaptable to our individual school systems and that we should create a product that can change i.e. model schools.

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Dr. Thomas J. Anton, a political scientist, made two points for the superintendents. He suggested that decentralization assists innovation if change is desired. And he also stated that as the public goals and the individual's goals are "most often different", the individual being in a structured organization should be closely researched to discover what he sees as goals from day to day. He feels that political science could not get at the individual teacher in the school systems because they are so closely protected by the classroom environment. In private talks with Dr. Anton, I learned that he felt that team teaching environments were more likely to reveal personal goals. Change agents would then be more able to do something about the changing teacher.

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Dr. Robert Chin, a social psychologist from Harvard, concluded his talks with a warning to those who would fight change. He said we should accept many of the intrinsic changes in schools as realistic forces. He feels that as we cannot really avoid them, we should therefore accept the challenge as we are custodians of changing child populations in a changing world.

* * *

Dr. Keith Goldhammer of the University of Oregon hypothesized that innovations originate outside friendship groups in a system area the first time. Very soon these are followed en masse by the major friendship groups. The investigator has observed this several times in Alberta, and as team teaching was easily started in St. Michael when the writer arrived from outside Calgary, Dr. Goldhammer's statement seems to apply. It would probably be much more difficult to institute now than two years ago.

Dr. Goldhammer also added a new phase to the writer's vocabulary: H.I.F.T. (habitual intuitive familiarity with things). In Dr. Goldhammer's experience, he has been aware of educators with the ability to habitually sense the rightness or wrongness of change and he suggests that change should not, therefore, always have to be objectively measurable.

* * *

On the overall picture, the superintedents' seminars were revealing. The superintendents were not so concerned with the actual changes and their objectives or results or side effects as they pertained to students, either individual or normative, as they were with with concern over the actual change agent, the number of agents, how to recognize them and how to control them. They were concerned with how to control the "waves" that change agents make. The phrase "wear a watch-fob" was a common one heard among the superintendents, and although they spoke with distaste about the "change watch-fobs" that some school systems were wearing for the purpose of public relations, they wondered how to avoid them. They were honestly confused as to how to control the changes and felt that the agents were the ones responsible and the ones to be controlled — not the changes themselves.

## THE VISITOR PROBLEM FOR MODEL SCHOOLS

I should mention a very serious debilitating factor in being a model school for changes. The school is to be a show place and visitors come in increasing numbers. One principal of an innovative school told me (and this was borne out by other observers such as Dr. Trump) that his high school had far overreached its limit in visitors. The principal has been in heavy demand throughout the United States since the innovation of his school and his lack of presence was felt by the staff. In addition, the students were constantly being on show and distracted and the staff was so busy answering questions that they had to neglect student counselling. The principal is now limiting his engagements and meetings in order to personally revitalize his school. He is also limiting visitors to a much smaller number. These two factors, he felt, had hurt the performance of his staff and students.

The same problem was observed in most schools visited. Some schools, such as the Chicago Laboratory School, have one person hired for the specific task of handling visitors. Ridgewood High School uses senior students to conduct visitors and tries to limit certain activities of the visitors such as the use of cameras. Some schools have one day a month during which they conduct seminars for visitors. Others run their schools wide open. While occasional visitors keep the staff on their toes and the students swelling with pride, large numbers of vistors constantly coming and going are a decided drain on the staff and principal, and a distraction to the student job at hand. The cumulative effect of visitors is bound to be adverse. As one educator remarked, "You have to keep feeding the beast (pride) and it grows all out of proportion."

One school that I saw was enjoying its reputation so much that when visitors came, they would stop the processes of the school and repeat for the guests a prescribed formula that had been designed months before and repeated many times over. This was one wave that the central administration was hard pressed to control.

In any event, schools must watch the "visitor effect". While a model or innovating school has a responsibility to the educational community, it should not be unaware of the increasing damage that may be done. I have already, this year, been cautioned by my staff that the number of visitors to St. Michael School is reaching a saturation point. In a way, the visitors supply the school with a reason for a kind of pride that, while it is easy to forgive, is hard to stop once started.

## GUIDANCE

On of the isolated, but distinct impressions received on the trip was during the visit to the John F. Kennedy High School in Washington. The academic staff meets during school hours once a month with the school guidance teachers and the central administration guidance supervisor. This is time when the fine arts and physical education staff take over the part of the student body that is the concern of this part of the staff, i.e. grade ten. The grade ten academic staff, it was felt in this school, didn't have the same opportunity to create rapport with students the way the drama and athletic teachers might. Therefore, the academic staff discussed several of the more difficult guidance cases and also some of those that were improving. This same activity has been tried at St. Michael with gratifying experiences for our staff.

## FLEXIBILITY

While it is nice to teach a large group in an amphitheatre with audio-visual aids at your finger tips, it is possible to team teach with just a large area such as one end of a gym. Large open areas are relatively cheap to build and if they were carpeted and included curtains that could be pulled across to house smaller groups, several classes could function well together. I have seen this activity carried on in my own gym without carpets or curtains.

## IMPLICATIONS FOR THE FACULTY OF EDUCATION

Practice teachers from the university may be used more as aides than "interferences". The St. Michael School declares one teacher in charge of the practice teachers and he or she acts as liaison between the teams in searching out areas that will best benefit the students and teams and yet give the practice teachers a training experience. The practice teachers must plan with the regular teachers, take serious responsibilities for the team objectives and be of direct assistance to the teachers. The practice teacher will work with varying groups — large, middle and seminar sizes. They will be responsible for at least one unit of study in one of the grades using their own main discipline. For example, a history major may take a grade eight class in social studies for one month with all of the motivation, teaching, drilling, remedial work and testing that would be involved for a regular teacher. He would be required to use the staff in teaming as he sees fit.

The remainder of the time, the practice teacher works in the other grades in related subjects, English and literature as well as social studies. These classes may be remedial, depth or assistance experiences. In any event, they meet once a day with their teacher-consultant for help and criticism.

The trick here, of course, is to make the practice teacher a real and effective member of the teaching teams, thus, the schools benefits by having extra staff two or three times a year.

I feel that this should be extended into the graduate level for all disciplines and that the graduate students be given course credit for such an activity. This is carried on very successfully at the University of Wisconsin at Madison. In the end, one hopes that new teachers will become professionals sooner. The University of Wisconsin reports some 500 practice teachers successfully graduated in this fashion and they are pleased with the results.

## EXPERIENCES IN DEPTH

I also saw many instances of closer co-operation between university and high school. There were several cases of university professors coming in once a week to work intimately with a small seminar of excellent students. St. Michael School is instituting such an activity this year with the co-operation of Mr. M. Chorney of the Faculty of Education, University of Alberta, Calgary. Mr. Chorney and some of his undergraduates will have superior students once per week in English seminars. This will allow the St. Michael students a chance to meet excellent university minds and afford the university students opportunities of research otherwise limited.

## PARA-PROFESSIONALS

I saw many instances of audio-visual assistants that were para-professionals — namely, skilled or semi-skilled commercial artists who would prepare transparencies, slides, posters, films, etc., for the teaching teams. These people are relatively inexpensive and perform an invaluable service at the school level. In Buffalo, Dr. Ira Singer, supplies this service for teachers in several school districts. A teacher supplies a rough explanation or sketch of an audio-visual aid and the artist reproduces it quickly and efficiently. It occurs to me that a person trained partially as a typist and as a commercial artist could be invaluable in a team office, and not add too much to the overall budget. Perhaps this market should be explored by the Southern Alberta Institute of Technology in Calgary. It is admirably suited to the production of such individuals. Frankly, with all the educational T.V., teaching machines, etc., that I saw, the audio-visual aid and the secretary seemed to make the most significant contributions to the professional teacher workload. The overhead projector seemed to be most favourable technological instrument for teaching large groups. Nova has 70 in its school, while the John F. Kennedy School has somewhere between 40 and 50.

# CHAPTER 9

# CONCLUSIONS

While flexible facilities are important to the team approach, the teacher remains the most important feature of any school. Therefore, the teacher should be given most attention before team teaching is instituted.

If in-service programs are to be used in preparing teachers, psychologists and sociologists should be part of these programs. Teachers must be prepared for the psycholoigal impact of working intimately with other adults and varying groups of students. Teachers must also be prepared for the loss of classroom identification and the addition of confusions which must be accepted and identified. It is important to note that these confusions will be different for each school and each staff.

If Calgary is to explore team teaching further, it should not be for the purpose of seeing whether team teaching has anything to offer. Team teaching has much to offer. This is an accepted fact all over North America. The important consideration is whether or not a staff can achieve professional development through the open climate of team teaching. Professional development of teachers must be our main reason for using team teaching techniques. It is the visibility of teachers, one to the other, that helps to improve the staff performance.

Professionally developed teachers, making independent decisions outside of the rigidity of central administration bureaucracy, have much more to offer the students. The teacher is the link between the curriculum and the learner. The professional teacher will provide better learning situations and the more professional teachers available the better. Team teaching provides the environment for such development.

At present I am satisfied that Alberta schools are doing team teaching more harm than good by their very careful approach to teaming. Administrators are neglecting the teachers' attitudes toward the new environment. They think in terms of teachers who co-operate rather than teachers who co-operate creatively; therefore, they must build a measure of conflict into the teams and then make the teachers aware of the potential for conflict and creativity.

Administrators in Alberta are also too concerned about buildings. They are building structures into their team schools that may well throttle the teams before they can make any significant advances. Rigid seminar rooms are often more spectacular to a visitor than functional to the school environment. The designers should pay more attention to large, open, acoustically-quiet areas and have fewer of the inertia-producting factors such as folding doors. At present the Edmonton Public School Board has five exciting elementary schools ready to build and they are concentrating on large, open spaces, carpeting and flexibility. I sincerely hope that they will pay a great deal of attention to preparing the teachers psychologically for these areas before the schools open.

It is also hoped that they will destroy the classroom image. No teacher should be allowed to think "This is my class and my class area". The teachers should deploy out of an office area in which all their desks are contained. Their supplies and equipment should also be in this office and so should their coffee pot. The staff rooms, supply rooms and equipment rooms that build so much inertia into our present schools could then be done away with.

Dr. Trump has said that we, the teachers, must not expect changes unless we are prepared to change and prepared to be different in our approaches to learning and teaching. If we are in fact going to do something different to avoid the "egg crate" effect in our schools, let us now get at it.

## ADDENDUM A

# WHAT RESEARCH IN THE BEHAVIOURAL SCIENCES SUGGESTS TO THE SCHOOL ADMINISTRATOR ABOUT THE SELECTION OF PERSONNEL FOR TEAM TEACHING

Whether or not we can accept team teaching as a desirable classroom innovation at the present time is rather beside the point. What we must do at first is give the innovation as much help as possible for its initial examination. The assistance that this paper proposes is directed toward the horizontal team (team members all teach the same subject) as opposed to the vertical team (team members cut across subject lines).

One of the serious flaws that exists in the horizontal team approach comes from the inter-personal conflicts that may arise. Dr. J. Lloyd Trump prefers the vertical team lately for this very reason. He implies this in a recent article[1]

> Personally, I prefer teams that cut across subject lines. Teachers still work in their specialities, while they benefit from group planning.

Teams of two or three or more persons associating in a common environment have been the concern of behavioural scientists for some time. The investigator surveyed the Psychological Abstracts back to 1960 and found at least 40 articles on the subject in a variety of sociological and phychological journals. Each article in turn suggests several others. It would appear that the behavioural scientist has much to say about the topic proposed for this paper. It would be especially interesting to examine the procedure used to pick the astronauts in the U.S.A. and Russia but this writer saw no evidence of this in the literature.

Robert Dubin[2] is very convincing in his arguments for primary group attitudes within institutions. He claims that while the individual will behave as required in most social institutions he will also focus his main attention on one — and that one only where he is able to make voluntary choices.

> Thus the areas for voluntary social action are precisely the institutions that are central to a man's life interest and that are therefore at the focus of his attention.

Therefore, it seems to follow that if administration is to get the most out of teams they should be so selected as to get the greatest satisfaction possible in order to encourage focus on the teaching role. This would have to be so organized as to allow the team and individual team members opportunity for voluntary choices as stated by Dubin above.

This point was missed by William Cartwright[3] in his article about teaching in the year 2065. He fails to make any mention of teachers as mature professionals making voluntary choices. It seems to this writer that this is merely relegating teachers to the role of bureaucratic subprofessionals. If there is a way to raise the performance of teachers to a higher professional level without serious disruption of the educational scene, it should be done; therefore, this paper looks at the research that might help improve an area in team teaching that is already in trouble.

According to Joseph Jaffe[4], psychiatrist, the dyad (two person team) has a language pattern that may reveal when the group is communicating satisfactorily. He defines dyadic speech as "the

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[1] J. Lloyd Trump, "What is Team Teaching," Education, (The Bobbs-Merrill Company, Inc., Indianapolis, Indiana, (Vol. 85, 6,) February, 1965, p. 327.

[2] Robert Dubin, "Person and Organization," Human Relations in Administration (Second Edition, Prentice Hall, M. J., 1962) p. 78.

[3] William H. Cartwright, "The Teacher in 2065," Teachers College Record (1965, 66, 4) pp.295-304.

[4] Joseph Jaffe, "Language of the Dyad," Psychiatry, (1958, 21, 3 August) p. 250.

total verbal output of an organic two-group which is potentially goal directed. Its goal is mutually satisfying communication, achieved primarily by verbal interaction." He feels that communication is mutually corrective and a two-way or circular flow of information. The ratio of repetition in the patterns for mutual understanding is .6 to .7 he feels, and a higher or lower ratio indicates too much or not enough variety in speech to be properly understood. Perhaps someday, administrators may be able to use such a device in spotting conflicts. Perhaps this is already the device used intuitively by successful mediators.

Also, the behaviourist is interested in what happens when the conflict is too high between goal oriented partners; but more important perhaps, he is interested in what happens when the conflict is too low. He is interested in the condition necessary for creativity, what happens when a third member is injected into a dyad, what happens to a team that has failed or witnessed a failure, and he is interested in what conditions are necessary for the proper function of the team.

Morton Deutsch[1] encourages us to build trust through cooperative orientation. This investigator has noticed that successful teams of teachers in the United States have written out their cooperative aims and published them - public commitment.

Moreover, J. M. Atthowe[2] points out that dyads tend to make a more conservative decision than an individual, but with greater rationality — especially if there are differences between partners. Dyadic decisions were desirably different from individual decisions when faced with alternatives. When faced with one or both members of a team being highly emotional V. B. Cervin[3] points out that they are more likely to change their minds later than the low emotional members. A good administrator may feel it wise to build differences into his teams but make sure that they commit themselves in writing — publicly. Also, as Kenneth Boulding[4] says about conflict "the biggest problem in developing the institutions of conflict control is that of catching conflicts young."

If an administrator builds conflict into his team in order to satisfy the rationality spoken of by Atthowe (above) he will have to make certain of the members' commitment to the common goal and then strive to keep channels of communication open in order to mediate conflicts.

Boulding[5] also points out that the team members should strive to overcome their natural egocentric and ethnocentric views of the world about them. In order to attain a common goal a team will have to understand the point of view of the social scientist " . . . a view of society that is, in theory, free from the perspective of his own person, culture, and notion." This points up all the more reason for a written commitment of team goals and objectives. Perhaps this is the reason why Dr. Marie DeCarlo of Bushey Drive School, Washington, D.C., frankly admits that she "brain washes" her students and teachers. She sets out to get rid of any preconceived notions they have of school and grades and classrooms and each other.

When building differences into teams, Jacob Rabbie[6] gives evidence that — most members would tend to avoid the "high fear" subject. If a member expressed great fear of large groups the team could make allowances by placing the high fear person in small group situations. But the team might not be able to solve the conflict if the teacher was extremely afraid of being watched by other adults while teaching. This may be a person in need of transfer to a traditional classroom.

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[1] Morton Deutsch, "The effect of motivational orientation upon trust and suspicion," Human Relations, (1960, 13) p. 138.

[2] J. M. Atthowe Jr., "Interpersonal Decision Making: The resolution of a dyadic conflict," Journal of Abnormal and Social Psychology (1961, 62) pp. 114-119.

[3] V. B. Cervin, R. C. Jayner, J. M. Spence, and R. Heinzl, "Relationship of persuasive interaction to change of opinion in dyadic groups when the original opinions of participants are expressed privately and publicly," Journal of Abnormal and Social Psychology, (1961, 62) pp. 431-432.

[4] Kenneth B. Boulding, Conflict and Defense: A general theory (New York: Harper, 1962, IX) p. 325.

[5] Ibid - p. 330.

[6] Jacob M. Rabbie, "Differential preference for companionship under threat," Journal of Abnormal and Social Psychology, (1963, 67, 6) pp. 643-648.

Stephen Schoen[1] adds another reason for having varieties of persons on teams. He found that a person who is very emotional or of low tolerance is capable of making significantly faster decisions than high tolerance subjects. Low tolerance persons have a need for "action". Interestingly enough the impatient, low tolerance subject was not less accurate than the others. Again, an administrator would have to be aware of what he had built into the team and encourage the high/low tolerance persons to make exceptions for the impatience of the other. Schoen also pointed up the fact that decision speed reflects the individual's ability to handle conflict and that this ability is relatively unaffected by limited conflict training.

An administrator may someday have an instrument that measures a person's ability to make snap judgements when faced with conflicting educational decision tasks and try to get at least one low tolerance person on each team.

Alvin Zander and Arnold Havelin[2] show through their study that higher competence people hold an attraction for other subjects. Perhaps this would pacify the danger of untenable conflict built into a team by the presence of a low tolerance person. Administration would have to be careful of two highly competent members, one of which was of high tolerance and the other of low.

Zander also reveals that if a capable group is built up, the members tend to stick with their own groups and peers "regardless of the members' similarities to others or their interdependence with others." This investigator has noted that in the United States where a school has only one or two teams on the faculty that the "team" tends to stick together and grow away from the rest of the staff. This may point up a danger for "careful" administrators who team in a modest fashion to begin with.

Leonard Worell[3] points out another dimension of interpersonal conflict. An individual who is in intrapersonal conflict may manifest conflict where there is none. While this may awaken a team that is in a rut, it could be dangerous in a highly motivated team. The administrator should try to identify those things in the conflicting environment that arouse the intraconflicted member and attempt to minimize the conflict while maximizing the predictive possibilities of the member's behaviour. Traditional administrators try to do this for traditional staff members now; it would be much more important for teams.

Dennis Kamano[3] states that if an individual's repsonse tendencies are mainly directed antagonistic responses, that in a widely differing dyad he will be in conflict a great deal of the time. Administrators would find an instrument useful that could predict antagonism levels and tolerance levels in order to place team members. Low tolerance people may function very well with most people but a very high tolerance person might merely put his opposite member into constant conflict situations. In any event, this investigator feels that this line of research might be very fruitful for the team school of the future.

Judith and Leonard Worell[5] suggest the use of the Edward's Personal Preference Schedule to discover the need related behaviours most preferred. It defines conflicted individuals in terms of the arousal of competing tendencies in particular situations. It may, however, need some refinements for school situations.

The Worells pointed up another important factor in conflicting persons—

> Our findings do suggest, however, that one important antecedent to producing original, variable, or potentially creative responses is personality conflict.[6]

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[1] Stephen J. Schoen, "Individual differences in conflict tolerance and their relationship to decision making performance," Dissertation Abstracts, (1964, 24, 8) p. 34-40.

[2] Alvin Zander and Arnold Havelin, "Social Comparison and Interpersonal Attraction." Human Relations, (1960-13). pp. 21-32.

[3] Leonard Worell, "Intraindividual Instability anl Conflict." Journal of Abnormal Psychology, (1963, 66, 5) pp. 480-88.

[4] Dennis K. Kamano, 'Relationship of ego disjunction and manifest anxiety to conflict resolution," Journal of Abnormal and Social Psychology, (1963, 66, 3) pp. 281-284.

[5] Judith Worell and Leonard Worell, "Personality conflict, originality of response, and recall," Journal of Consulting Psychology, (1965, 29, 1) pp. 55-62.

[6] Ibid - p. 62.

If creativity is desirable in teams it would seem that the conflicted person would be a valuable member of a team; however, this places extra emphasis on assigning stable personalities with the intraconflicted person — perhaps they should even be aware of each other in this regard from the beginning.

It appears that differences between team members is desirable and that conformity, while it doesn't cause conflicts, is a debilitating factor in the team approach to an objective or goal. Leon Rosenburg[1] conducted a study that showed conformity as directly related to confidence in the partner. Perhaps then it is important to build in nonconfidence factors in order to avoid the deadening factor of conformity. The study showed that anything that would cause a reduction in self-confidence or increase the confidence in the partner would increase conformity. While conformity was never meant to excite or stimulate, nonconformity can be a very deadly thing if misused in the school. Building in nonconformity personality traits into a horizontal team would challenge the most courageous of administrators. Will it ever be possible that a sensitive enough instrument will be designed to measure this sort of thing for administrators?

Several researchers have noted that non-friends or strangers make better team members if creativity, production, performance feed-back, excitement, and excellence of performance are required.

This writer's own experience with teams is in line with the findings of these investigators: Scofield[2], Elaine and Bill Walster[3], J. Ex[4], and Jessor et al[5].

Jessor and his colleagues have established that "need imbalance" is just as much a source of "creative accomplishment" as it is a source of "personality maladjustment." In other words, the intelligent neurotic could be the very soul of a team of teachers.

Raven and Eachus[6] support this (if creativity is important to a team) by showing that cooperative triads solve problems more rapidly, evaluate team members more favourably and show less hostility. This all leads to conformity of course.

The Borgattas[7] noted the dyads within the triad group (coalition dyads) have less tension, more agreement and more opinions than the entire triad. This points out that there is more likelihood of conformity for a coalition within larger groups. Perhaps teams of three would be better for team teaching.

Triads would be faced with having to lose one member on occasion to be replaced by a relative stranger. How would the coalition group behave toward this newcomer? Jerold Heiss[8] discovered that if the receiving pair were working in a satisfying relationship, this would colour their perception of the newcomer — they would receive him well. And of course, the opposite also held true. The administrator would be well advised to break up the entire triad if there were debilitating personality clashes within the receiving dyad and place three entirely new members in the team.

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[1] Leon Rosenburg, "Conformity as a function of confidence in self and confidence in partner," Human Relations, (1963, 16, 2) pp. 131-139.

[2] R. W. Scofield, "Task productivity of groups of friends and non-friends." Psychological Rep., (1960, 6)

[3] Elaine Walster and Bill Walster, "Effect of expecting to be liked on choice of associates." Journal of Abnormal and Social Psychology, (1963, 67, 4) pp. 402-404.

[4] J. Ex, "The nature of the relation between two persons and the degree of their influence on each other." Acta Psychology. (1960, 17) pp. 39-54.

[5] Richard Jessor, Shephard Liverant, and Seymour Opochinsky, "Imbalance in Need Structure and Maladjustment." Journal of Abnormal and Social Psychology, (1963, Vol. 66, No. 3) pp. 271-275.

[6] Bertram Raven and H. Todd Eachus, "Cooperation and competition in means interdependent triads." Journal of Abnormal and Social Psychology.

[7] Marie L. Borgatta and E. F. D. Borgatta, "Coalition in three-person groups," Journal of Social Psychology, (1963, 60, 2) pp. 319-326.

[8] Jerold S. Heiss, "The Dyad Views the Newcomer: A Study of Perception," Human Relations, (1963, 16, 3) pp. 241-248.

The newcomer should be carefully chosen and oriented. Oram and Heilizer[1] noted that if the goal-gradient appears too steep to the newcomer, it will cause frustration and conflict behaviour. In-service work at this point with indoctrination conferences would help ease the transition.

Several authors [2-3-4] all felt that conformity of a partner in a dyad might become more important, as time went on, than his actual contribution to the goal oriented tasks. This may pose a problem of changing team members about at intervals. The when and how often questions pose a serious problem for the administrator. Just imagine a present day principal or superintendent deciding to shuffle his teachers about in order to obtain creativity and better goal orientation — talk about excitement!

According to Band and Brody[5] and also Robert Lowie[6] it is desirable to have teams that are of the same primary group as possible. However, this would only hold for teachers of the emotionally disturbed. If special classes are organized in a school or system it would appear that a conformity-loaded team would be useful where low conflict is required. The above mentioned studies were done with teams goal oriented to work with emotional persons. Both papers talk about solidarity and built-in potential for conflict. They suggest conformity and avoidance of conflictual differences among the team members.

Further studies go on to indicate differences among team members as being desirable. Hoffman and Maier[7] discovered that heterogeneous groups had more directions or avenues available for voluntary choice and solution to the problem. They also found that heterogeneous groups are superior in problem solving ability — including problems designed to produce emotional conflict.

> It is suggested that solutions with high quality and high acceptance can be obtained from groups in which the members have substantially different perspectives on the problem, and in which these differences are expressed and used by the group in arriving at the final decisions.[8]

Zander and Medow[9] found that publicly stated levels of aspiration stated with uniformity for the group is fruitful for teams. But they also found that a team that fails to reach aspired heights tends to lower its sights in comparison to what would happen to an individual with the same aspirations. Individuals would be less likely to fall back or regress. Apparently it is important to keep the aims and objectives in front of the group and channels of communication open to the administration. Perhaps the administration could support a good team during heavy going and forestall regression. It also points up the necessity for personality varieties within the team in order that the group remain in some conflict during a low period. The conflict should open more avenues of behaviour than conformity and regression.

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[1] Phyllis G. Oram and Fred Heilizer, "A Note on the Concept of Conflict," Journal of Psychology, (1965, 59, 1) pp. 35-43.

[2] M. D. Croner and R. H. Willis, "Perceived Differences in Task Competence and Asymmetry of Dyadic Influence," Journal of Abnormal and Social Psychology, (1961, 62) pp. 705-708.

[3] Richard H. Willis and John T. Hale, "Dyadic interaction as a function of amount of feed-back and instructional orientation," Human Relations, (1963, 16, 2) pp. 149-160.

[4] Frederick Kanfer, Bernard M. Bass, and Irvin Guyett, "Dyadic speech patterns, orientation, and social reinforcement," Journal of Consulting Psychology, (1963, 27, 3) pp. 199-208.

[5] Raymond Band and Eugene B. Brody, "Human elements of the therapeutic community: A study of the attitudes of people upon whom patients must be dependent." Archives of Gen. Psychiatry, (1962, 6, 4) pp. 307-314.

[6] Robert H. Lowie, "Compromise in Primitive Society." International Social Science Journal, (1963, 15, 2) pp. 182-229.

[7] L. R. Hoffman and N. R. F. Maier, "Quality and acceptance of problem solutions by members of homogeneous and heterogeneous groups." Journal of Abnormal and Social Psychology, (1961, 62) pp. 401-407.

[8] Ibid - p. 407.

[9] Alvin Zander and Herman Medow, "Individual and Group Levels of Aspiration," Human Relations, (1963, 16, 1) pp. 89-105.

At this point the writer must agree that all this looks as if the administrator of a horizontal teaching team is carrying a loaded gun pointed at himself at all times. Perhaps George Theodorson[1] helps us resolve our fright. He says—

> The expression of hostility and conflict in a small group is a normal part of the small group process and is, in fact, a positive and even necessary factor in the development and maintenance of small group cohesion . . . The value conflict that does occur occurs within a value system which allows for reinterpretation and modification of conflicting interests and values . . . .

Built in differences would aid the creative function of teaching teams. Flexibility is one of the main features of team teaching; therefore, rapid but sound judgement, continuing communication with administration and creativity would aid the flexibility.

While this investigator realizes the limited nature of this paper and also that it may appear somewhat naive, there is every reason to believe that behaviourist science has much to offer educational administration even in this one small area of education.

If a team of administrative researchers set out to explore the literature available, and research designed to test the theories were offered, and instruments designed to minimize the potential errors in team teaching personnel selection — the risk of personality conflict may well disappear and a valuable structure added to educational organization. Of course, the opposite may be true. The research team may find evidence that such a structure in schools is too expensive and is not worthy of further attention.

* * *

[1] George A. Theodorson, "The Function of hostility in small groups," Journal of Social Psychology, (1962, 56) pp. 57-66.

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# ADDENDUM B

## SCHOOLS AND OTHER CENTRES VISITED

Mr. Dave Fitzpatrick, Principal,
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Sister Mary Charles, Professor,
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Dr. Allen Glatthorn, Principal,
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Dr. Carl H. Peterson, Principal,
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Miss Bettina King, Principal,
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Dr. Raymond A. Hettler, Principal,
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Mr. J. C. Stoltenberg,
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Mr. O'Gurra, Principal,
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Mr. Lloyd Johansen, Principal,
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Superintendent, Rich Township High Schools,
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Rich Township High Schools,
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Principal, Rich Central High School,
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STANFORD, California.

Dr. Edward Pino, Superintendent,
Reed School District,
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(Superior building design and program for team teaching)

Dr. John Goodlad,
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LOS ANGELES, California.

# ADDENDUM C

# TEAM PHILOSOPHIES

## ST. MICHAEL SCHOOL

Calgary, Alberta

## DEPT. LANGUAGE 9 and 8

**Mr. L. W. Bunyan**
**Miss R. Meidinger**

### I. Statement of Philosophy and Summary of Curriculum

1. All the communication skills — reading, writing, listening and speaking will be given focus.
2. The team will focus on inductive experience in assisting students to conceptualize through writing and speaking such that the reader or listener may appreciate the original experience.
3. In the writing or composition development, peer evaluation on a one to one basis or in seminars will be used prior to and in conjunction with teacher evaluation and instruction.
4. The team is interested in developing the students' understanding and awareness of the symbolic aspect of the language, through history of the language and through structural grammar.

### II. Statement of Aims and Objectives.

The team holds the highest ideals for simple, clear expression for publishable materials.

### III. Ability Grouping.

Ordinarily the students will proceed through large and small group instruction periods as a class, however —

1. enrichment opportunities for better students will be provided in seminar sessions with a university English professor,
2. and, from time to time homogeneous groups, organized through diagnostic testing, will be given remedial lessons.

### IV. Schedule Provision.

1. Five forty-five minute periods are alloted to each grade per week for Language.
2. The team uses a modular system for each forty-five minute period, attempting to furnish three student experiences per period.
3. In the future, believing that better students get the greatest benefit by independent research, the team will attempt to provide for this experience.

### V. Instructional Groups.

1. Instruction in large groups of fifty and seminar in groups of four to five is used at all ability levels.
2. Large groups of one hundred or more, combining grades eight and nine, will be provided for wherever team advantages are seen.

### VI. Special Instructional Materials.

The following technological devices will be used wherever possible to gain advantages inherent in the device(s).

1. tape recorder
2. overhead projector
3. filmstrips
4. slides
5. records
6. charts
7. S.R.A. Lab.
8 outside resource persons
9. opaque projector

To furnish the program with depth beyond the department curriculum texts, the following will be used:

1. Teaching Language and Literature - Loban and Ryan.
2. English Sentences - Paul Roberts.
3. Patterns of English - Paul Roberts.
4. Patterns for Writing II - Dashwood Jones.
5. Discovering our Language - Postman, Morin and Morin.

## Dept. SOCIAL STUDIES - 7, 8 and 9

**Priscilla Nessman**
**Rosemarie Meidinger**
**Pat Cleary**
**Rachel DeFelice**

### I. Statement of Philosophy.

The Junior High Social studies team regards the study of Social Studies from a pragmatic point of view — a view that the students should be able to use throughout life, knowledge in the areas of geography, history, civics and current events.

### II. Aims and Objectives.

Our primary aim is the development of a realization of the importance and influence of social studies in the students' day to day lives.

Although it is required that students develop specific abilities and skills, and understandings and attitudes in each individual unit of study, it is desired that they be able to form from these, generalized concepts within the whole field of study. For example, the student should be able to interpret a present day situation in terms of the historical and geographical influences on it.

We feel that this may best be achieved through the inductive experiential approach which is largely possible because of team teaching.

### III. Instructional Grouping.

Large group instruction would involve the entire class, from approximately 45 to 75 students. This may take the form of a lecture, introducing a new concept, the presentation of a guest speaker, or the use of visual aids such as movies. Although all members of the teaching team may be present, this would not be necessary in all large group situations.

For purposes of class discussion in which a teacher would be directly involved, the large group would be divided heterogeneously into smaller groups, the size of which would be determined by the number of teachers involved.

Small group seminars consisting of five or six students, would be set up for discussion and evaluation of specific topics. Through these each individual would be given the opportunity to express himself.

In order to develop the student's ability to work independently, situations for indvidual research would be provided.

### IV. Ability Grouping.

Enrichment would be provided for the better students through small group discussion seminars, small group work projects, and individual research on assigned topics or related topics of the student's own choice.

Remedial experiences would be provided through small group and individual intensified instruction.

### V. Schedule.

The timetable provides for five forty-five minute social studies periods per week. One of these is set aside for seminar discussion in the field of current events.

There is no rigid scheduling of instructional grouping. Flexibility here allows for differences in student abilities and content.

### VI. Special Instructional Materials.

These would consist of:

1. Visual aids — films, filmstrips, slides, maps, pictures, overhead projector and transparencies, and opaque projector.
2. Library references — books, newspapers, magazines and special content files.
3. Community resources — guest speakers, displays.
4. Student textbooks.

### VII. Other Special Features.

1. Field trips — e.g. newspaper morgue.
2. Students' role playing — e.g. mock parliament, mock election.

## LANGUAGE 7

### I. Objective:

To enable students to communicate effectively in the areas of writing, reading, speaking and listening. That is to say, "to promote an appreciation of the need to use words as accurately as we can, and a sensitivity to clear and vivid expression in all phases of communication".

### II. Curriculum:

Our main interests are in the field of grammar, composition, vocabulary building, and spelling. Our aim here is to instill in each student a basic and practical concept in these areas — concepts upon which a more mature means of communication may develop.

### III. Instructional Grouping:

Large group instruction involves the entire Grade Seven class of 75 students. The whole group would be kept unified when the material being presented, perhaps a new concept being introduced, a review, a test, was deemed suitable for handling in this manner. Smaller groups, and thus more individual attention, will be used at various times, such as remedial drill, discussions, seminars, individual research.

### IV. Ability Groupings:

If and when necessary, students will be grouped, from time to time, for remedial work, while faster students can be encouraged to pursue enrichment tasks and perhaps the regular course at a faster pace. The average student will pursue the regular work at normal speed.

**V. Schedule:**

The time-table provides for five forty-five minute Language periods per week.

One forty-five minute period per week will be devoted to spelling with a home assignment to follow.

There is no rigid scheduling of instructional groupings. Flexibility here allows for differences in student ability, mutability of achievement, and course content.

**VI. Special Instructional Matter:**

When deemed advantageous, the following aids may be employed:

(a) student text books
(b) illustrative posters
(c) recordings
(d) tape recorder
(e) filmstrips
(f) library references
(g) student critic sheets
(h) overhead
(i) miscellaneous

**VII. Other Special Features::**

Students' role-playing, e.g. character development, mood-creating, etc.

P. Cleary
P. Nessman
R. De Felice

## LITERATURE - 7

**I. Objective:**

To instill in the students an appreciation of and a desire for good literature. Coincidently, and in keeping with the Departmental objectives, it is our hope to improve their personal development, both within the family and the community, and to aid in occupational preparation.

**II. Curriculum:**

Our main interests are in the fields of reading and understanding prose and poetry. Our aim here is to try to develop in the students good reading habits, methods of correct interpretations, increased vocabulary, improvement in self-expression, both verbal and written, and a sense of pleasure from the adventure in Literature.

The text "Prose and Poetry Journeys" is the main source of materials. Stress is also placed upon library facilities, reading of timely pieces of literature of all types, and class participation in reading novels, writing book reports, memorization of significant and meaningful poetry selections, and student writing of poems and short stories.

**III. Instructional Grouping:**

Large group instruction includes the entire Grade Seven class of 75 students. The whole group would be kept unified when the material being presented, perhaps a new story being read, the introduction of some poem, the reading of a novel, etc., was deemed suitable for handling in this manner. Smaller groups, and thus more opportunity for active student participation and more individual attention, will be used at various times for such as seminar discussions of literary selections, development of character sketches, remedial drill, individual research and pursuit of knowledge, etc.

### IV. Ability Groupings:

If and when necessary, students will be grouped for remedial, enrichment or individualized work.

### V. Shedule:

The time-table provides for three forty-five minute Literature periods per week. No set type of lesson is prescribed for any one day.

There is no rigid scheduling of instructional groupings. Flexibility here allows for differences in student ability, suitability of achievement and course content.

### VI. Special Instructional Matter:

When deemed advantageous, the following aids may be employed:

(a) student text books
(b) recordings
(c) tape recorder
(d) movies
(e) library references
(f) seminar outline sheets
(g) overhead
(h) miscellaneous

P. Cleary
R. De Felice

## DEPARTMENT OF MATHEMATICS

### I. Philosophy:

The science of mathematics, servant of all other sciences, holds one the most important keys to the future of the world. Therefore, we must emphasize that mathematics should have a place of prime importance in the curriculum of to-day's junior high schools.

The world of mathematics could be represented by a tree with many branches. Each branch is dependent on every other branch. All these branches meet at the tree trunk; which, in turn, is dependent upon a firm foundation of strong roots. It is this foundation that students in junior high schools must obtain in order to enter the field of secondary education.

"Traditional" mathematics has been, to a great extent, the process of memorizing rules and formulae and using "tricks" to solve problems. To-day, "modern" mathematics stresses meaning and understanding in every new mathematical experience.

We, as teachers, shall strive to make the science of mathematics meaningful, exciting and challenging to the students.

### II. Objectives:

The over-all aim of the junior high school mathematics program is to prepare students for more advanced study in mathematics at the secondary school level.

Other important objectives include:

- to teach mathematics meaningfully,
- to teach mathematics for the aesthetics of this science,
- to teach mathematics to have the students develop an understanding of the significance of this science in the modern world,
- to teach mathematics to be developed as a skill in the use of the fundamental processes.

### III. Grouping:

A. General Pattern:

Formal lectures will be presented by the team to each grade as a single group. Following the lecture the team will judge and choose those students who will need more individual attention. These students will leave the main class and form a subgroup. This subgroup should not exceed 10 students.

**B. Alternative Pattern:**

We may find it necessary to deviate from the general pattern mentioned above, and find that ability grouping is a more desirable practice. Both groups would receive the same mathematical instruction and concepts, but the amount, depth, complexity, and manner of presentation would vary.

NOTE: The alternative pattern is designed mainly to accommodate the extra large group in Grade 7.

**IV. Schedule Provisions:**

Time is allocated to each grade in this manner: four forty-five minute periods per week.

Additional instruction may be obtained by the students as the need arises.

**V. Instructional Groups:**

Formal instructional groups number 40 to 70 students. Subgroups will consist of aproximately 6 to 30 students.

**VI. Special Instructional Material Used:**

In addition to the text information, each student will be given mimeographed instructional material of each unit. Work-sheets will also be handed out to act as a continual review of previous material taken.

A. Verbeek
P. McLaughlin

## SCIENCE

**I. Statement of Philosophy:**

In today's world knowledge in science is of utmost importance. Basic scientific knowledge is necessary in everything living, whether one spends his/her day in a kitchen, garage, or a launching pad for rockets. Science has taught us how to make nature do things for us and it is up to each individual to use this knowledge to make his life load lighter, extend his pleasure, and prolong his life.

The junior high school science is designed to be an introduction to the more advanced sciences in the High School. The grade seven course covers botany, geology and water; grade eight, zoology, physics and weather; and grade nine, physics and chemistry.

**II. Aims and Objectives:**

In the junior high school science the student should learn: skills, attitudes and understandings. The skills that one must acquire are a knowldege of science terms, the skill of handling science equipment, skill in experimentation, using the scientific method, skills in scientific reasoning, that of cause and effect, and the skill of good judgement and utilization of knowledge acquired.

The attitudes one should acquire are those of curiosity and interest in scientific discoveries. One should learn perseverance when faced with a difficult problem, along with a creative imagination to solve it. The attitude of a love for one's work and an interest in it should also be developed.

The understandings to be learned are the various topics outlined in the curriculum guide. This is the material knowledge which must be covered to achieve the skills and attitudes. It is also the knowledge which is basic to further study in the field of science.

The final objective is to give the students a foundation of knowledge for future grades, and the ability to write examinations with confidence.

**III. Grouping:**

To achieve these objectives I hope I can present these courses in an interesting manner and bring out desires within the students to do work on their own. To do this I will have to take my basic groups, which are graded at each level, and break them into groups of interest and ability. Students who fall behind will have remedial work while students that can advance faster will be given enrichment. Remedial and enrichment groups can work with one or both of the teachers helping on the team.

**IV. Schedule:**

The timetable provides 180 minutes per week, which are broken into four forty-five minute periods. Students will also be able to get extra help at noon and after school. The allotted time will be distributed between instruction, experimentation, seminar and individual study. There will not be a structured plan for time use but will be used as the team see fit during each individual lesson.

**V. Special Instructional Material:**

Instructional material will include films, filmstrips, pictures, reference books, and material brought in by the pupils.

**VI. Evaluation:**

There will be a weekly examination of approximately twenty minutes duration in grade nine, and a bi-weekly examination of the same length in grades seven and eight. Students will also be evaluated on homework, notes and class participation.

**VII. Other Features:**

There are no special features planned at this time. However, it is hoped that field trips might be taken and guest speakers could be brought in.

It is also hoped that a science club could be started within the school. Projects which arise out of the science club or science class that show superior work and individuality will be entered in the Science Fair.

**T. Kornak**

## ABINGTON HIGH SCHOOL

NORTH CAMPUS

Abington, Pennsylvania

## ENGLISH

James Giordano, Chairman

### I. Statement of Philosophy and Summary of Curriculum:

Each generation gives new form to the aspirations that shape education in its time; each school formulates these aspirations into working hypotheses; and within each school each department then particularizes these general hypotheses into the selection of specific materials and procedures which hopefully lead the student to sense the conceptual structure of the things he observes around him, of his generation's aspirations.

Accepting Alfred North Whitehead's premise that "education should involve an exposure to greatness," we at North Campus have attempted to devise, select, and utilize those materials and procedures which will challenge the superior student and yet not destroy the confidence and will-to-learn of the student who is less able.

We retain no illusions about the difficulty of such a course. Yet it is our belief that the teaching of English requires imagination and daring, and that if we are to pursue excellence and at the same time accommodate students of all abilities, the following procedures, materials and methods present a most worthy experiment in education.

A brief digest of the literature program is attached. Complete curriculum guides in literature and composition are available from the school district office.

### II. Ability Grouping:

Students are homogeneously grouped by ability into four classifications: honors, high ability (I), average ability (II), and low ability (III). Each ability group is required to cover a common core of literary works with supplementary materials being used primarily at each ability level to help vary the intensity and difficulty of instruction.

### III. Schedule Provisions:

The number of minutes of classroom instruction varies with the ability level of the student in the belief that the brighter student will utilize his free time to greater advantage for additional reading and individual study. The higher the student's ability level, the less time he spends in the formal classroom situation; the lower the student's ability, the more formal instruction he receives in the classroom. Honors and Ability I groups receive eight modules (200 minutes) of formal instruction throughout the week; Ability groups II and III receive ten modules (250 minutes) of instruction.

The Honors and Ability I groups meet on a 3-2-2-1 plan, meaning that during the five-day school week, these groups will attend class only four of those days in the following manner: one day for 75 minutes (3 modules), two days for 50 minutes (2 modules), and one day for 25 minutes (one module). The Ability II and III students meet regularly throughout the week for a 50 minute period each day, or on a 2-2-2-2-2 plan.

### IV. Instructional Groups:

Instruction in large groups (150 students) and in seminars (8-10 students) is utilized to some extent at all ability levels. While only the Honors, Ability I, and Ability II groups participate in the large group instruction program, the availability of the adjoining seminar rooms makes them easily accessible to all ability levels.

The two higher ability levels are the only groups which are divided into thirds and scheduled in seminar situations where about 8-10 students of each class of approximately 27-30 students meet for one 25-minute module each week.

### V. Special Instructional Materials:

**English 2600:** the programed English text "English 2600" is being used throughout the department for the first time. Procedures for the use of the text vary with ability levels, with the higher ability students given greater freedom and opportunity for self-direction. After the initial pre-test, no classroom time is consumed for further instruction with the two top ability groups; these students are expected to assume the responsibility of working through the text at their leisure. The suggested procedure for lower ability groups provides for greater teacher guidance and classroom supervision.

**Contemporary Composition:** This series of lessons on the teaching of writing developed for use on the overhead projector is being used in the large group instruction program. The series of projectuals is part of a structured approach in teaching the student the basic essentials of sentence structure, paragraph patterns, and overall organization.

**Bantam Learning Units:** Consisting of selected readings on various themes, these sets of books are being used for the low ability students to provide them with a wider variety of interesting supplemental work. The acquisition of these units offers the teacher of these groups greater flexibility in planning and aids in motivating an oftentimes uninterested group of students.

**Tapes:** While the individual teacher may still continue to use the portable tape recorder in his classroom, provision has been made for transmitting tapes or special programs through the public address system from the new language laboratory control room. Such provision offers the possibility of allowing the student to listen to an assinged tape from an individual study carrel in the library.

### VI. Other Special Features:

**Lay Readers:** After extensive testing and interviewing, a lay reader program has been initiated for the two top level ability groups and is in operation at both grades 9 and 10. The student at these levels now has the opportunity to write with greater frequency and to receive his evaluations sooner. All students involved are required to complete 24 writing assignments per year, or approximately six compositions per report period.

**English Resource Center:** This room, the size of a normal classroom, is stocked with reference materials and paperback books of literary merit which offer the interested student the opportunity to work on independent projects or to pursue a particular literary interest at his leisure. The student is permitted to study here without teacher supervision during or after school.

### VII. Electives:

The English department also offers an elective course in journalism. This class meets for a single double-period each week; average class size is about twenty.

# READING

### Frances N. Crawford, Chairman

## I. Summary of the Reading Curriculum:

The reading curriculum encompasses many phases of the total instructional program. Founded on the educational principle that each child should progress in materials at his own level and at his own rate of speed, an extensive testing program is carried out in the beginning and end of the year. Therefore, the student working on materials to meet his individual needs, can derive a feeling of accomplishment from his progress if he sincerely puts forth the effort. Highlights of the program include strengthening comprehension skills and building vocabulary, stressing main points of a selection, study skills as related to the subject areas, and spelling. The Reading Center is also available to students not presently enrolled in reading classes and referred by the guidance counselor or the classroom teacher.

## II. Ability Grouping:

The two courses, Reading Skills and Development Reading, are divided into two groups. California Achievement scores in reading, individual testing, mental and emotional limitations, and the recommendation of the Reading Specialist are all involved in the placement of a student.

## III. Schedule Provisions:

Reading Skills and Development Reading are both elective subjects. However, Reading Skills is classified as a major subject and is scheduled for eight modules per week. A ninth module, for a total of 225 minutes, is required when the Reading Center is open on Friday for individual work. Development Reading is scheduled for two modules, or fifty minutes, per week. The Reading Center is open on Friday for these students who wish to improve their reading skills on an individual and independent basis. A student enrolled in either Reading Skills or Development Reading may work any number of modules in the Reading Center on Friday.

## IV. Instructional Groups:

The enrollment of Reading Skills classes varies from ten to twenty. In Development Reading, the class averages approximately twenty. The attendance in the Reading Center on Friday varies from five to twenty, depending upon the module.

## V. Special Instructional Materials Used:

The special instructional materials available for class work and independent work in the Reading Center are many and varied: reading accelerators, multi-level skill building material, multi-level programed material (including some in spelling and in the content areas), over-head projector, tape recorder, and a classroom library.

## VI. Other Special Features of the Program:

The Reading Center offers the opportunity to a student to improve the basic skills of reading and spelling. A student who is sincerely motivated and interested and who diligently practices the techniques will find not only improvement in these areas but also in the subject matter areas.

# ADDENDUM D

## St. Michael Junior High School
## ENGLISH SEMINAR REPORT

Committee:

Members:

Chairman

Recorder

Express opinions and suggestions for improvement of the author's use of the following:

A. **FORMAT:**
1. Manuscript form
2. Legibility

B. **MECHANICS:**
1. Grammar
2. Sentence Structure (Are the sentences WORDY? TOO LONG? TOO SHORT? LACKING IN VARIETY? TOO MANY MODIFIERS? VAGUE? LACKING IN CONCRETE NOUNS AND VERBS?)
3. Punctuation

C. **SPELLING:**

D. **CONTENT:** (Does the author say what he set out to say? Does the author stay on the topic? Does the author give enough information for the reader's complete understanding of the topic?)

E. **ORGANIZATION:**
1. Has the author INTRODUCED, LIMITED AND CONCLUDED the topic? How could it be improved? Be specific.
2. Does the essay have TRANSITION? UNITY? COHERENCE? How could it be improved from the standpoint of interesting prose?
3. Does the paper start at a good point, move in a straight line and stop at a good point? Does the paper have a plan that the reader can follow? Does the paper seem quite logical in its treatment of the topic?

Further comments:

Chairman's Signature

## St. Michael School

## TEACHER PLANNING

## LANGUAGE 9

<table>
<tr><th>GOAL</th><th>STIMULUS</th><th>ACTIVITY</th></tr>
<tr><td>Monday, 22<br>To realize changes in verb when used with auxiliary.<br>To motivate comp.</td><td>1. Paul Roberts - P. 53 expanding the predicate.<br>2. Consider basis for making choices - p. 508 - Loben and Ryan.</td><td>1. Review use of model. Several sentences on board - add A - see change in verb. Go on to "be" and "ing" - and "have" and "en" - p. 53-54. (Assign - generate 5 sentences for each type).<br>2. Discuss approach (qualities - person). Assign. - write for peer evaluation for tomorrow.</td></tr>
<tr><td rowspan="2">Tuesday, 23<br>To realize changes in verb when using module and auxiliary.<br>To evaluate comp. of peers.</td><td>1. Paul Roberts - Ex. 15 - p. 57 (on board) 1-10.<br>2. Comp. - The Person I Would Like to be Like.</td><td>1. Seminars - write sentences - determine changes which occur in and thru use of Mor. A. (½ hr.).<br>2. Peer eval. of essays. Assign. Write in good for tomorrow.</td></tr>
<tr><td colspan="2">Hand in sentences written for homework.<br>Teacher take out and check - feed back.</td></tr>
<tr><td>Wednesday, 24<br>To awaken intellectual curiousity.<br>To motivate toward comp.</td><td>Hand in Essays.<br>1. Consider codes of living.<br>List of sayings and mottoes.</td><td>1. Individ. complete sheet agreeing or disagreeing with sayings.<br>2. Small group take out and tally results.<br>3. Seminars - discuss sayings.<br>SELF INTEREST vs. GOOD WILL</td></tr>
<tr><td rowspan="2">Thursday, 25<br>To awaken intellectual curiosity.<br>To motivate composition.</td><td colspan="2">Teacher feed-back essays — Person I Would Like to be Like</td></tr>
<tr><td>1. Opinion sheet of sayings and mottoes.<br>2. Dreamers - p. 36 - Mdn. Eng. Writers.</td><td>1. Feedback from small group on results of stmts.<br>2. Read poem in class - write comp. Should Soldier stay and fight or should he find some way of getting around the situation.<br>(SELF INTEREST vs. GOOD WILL)<br>Draw analogies - write generally - on paper beneath poem.</td></tr>
<tr><td rowspan="2">Friday, 26<br>To review pred. expansion.<br>To study noun clusters.</td><td colspan="2">Hand in paragraphs on poem — teacher take out and check.</td></tr>
<tr><td>1. Expansion of Predicate Etymology of words - Stan's book.<br>2. Noun clusters - Paul Roberts. p. 64.</td><td>1. Oral review - sentences on board.<br>2. Look at 10 basic sent. patterns and discuss roles of nouns in each (generate on board).<br>3. From examples on board determine generalization for noun cluster.<br>Change basic patterns to those including noun clusters.<br>From examples - observe and clasify adj., nouns and verbs acting as modifiers in noun clusters.</td></tr>
</table>

# ADDENDUM E

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# SUPPLEMENT TO TEAM TEACHING REPORT

Since my report on team teaching was first published in November, 1965, additions have been made to the existing building at St. Michael School. Along with several traditional classrooms, four areas suitable to team teaching have been designed and constructed. The entire Junior High School student population is now accommodated in these new team teaching areas and traditional classrooms continue to be used only as support rooms. These new areas are shown on the attached sketch.

The four areas have been designed to act as large campus areas for: humanities, science, mathematics and a humanities materials resource centre. This allows large numbers of students from one grade or more to attend classes at the same time in a particular campus area and yet continue to be quite flexible. The mathematics and science campuses will contain their own materials resource centres.

The humanities campus is over 2,000 square feet in area and is carpeted. The carpeting is assisting us to do things that are, in effect, different by enhancing the environment that is unique to teaming. This is in addition to its obvious value in reducing the noise level in the large open areas that are part of our team campus. Instead of sound proof doors (that are expensive and tend to be inert as mentioned in the report) three curtains may be drawn independently to separate the large area into four smaller ones. Furthermore, the areas are all trapezoidal or amphitheatre in shape. Four students microphones are suspended from the ceiling and a neck microphone is located at the central teaching platform. Whenever occasions arise for student participation in large groups, the microphones make it possible for all students to hear and to be heard. It must be understood however, that these student responses result naturally during the discussion of any given subject. They are not in reply to a teacher question to an individual student in the large group. The lighting for each area is controlled from the central teacher station.

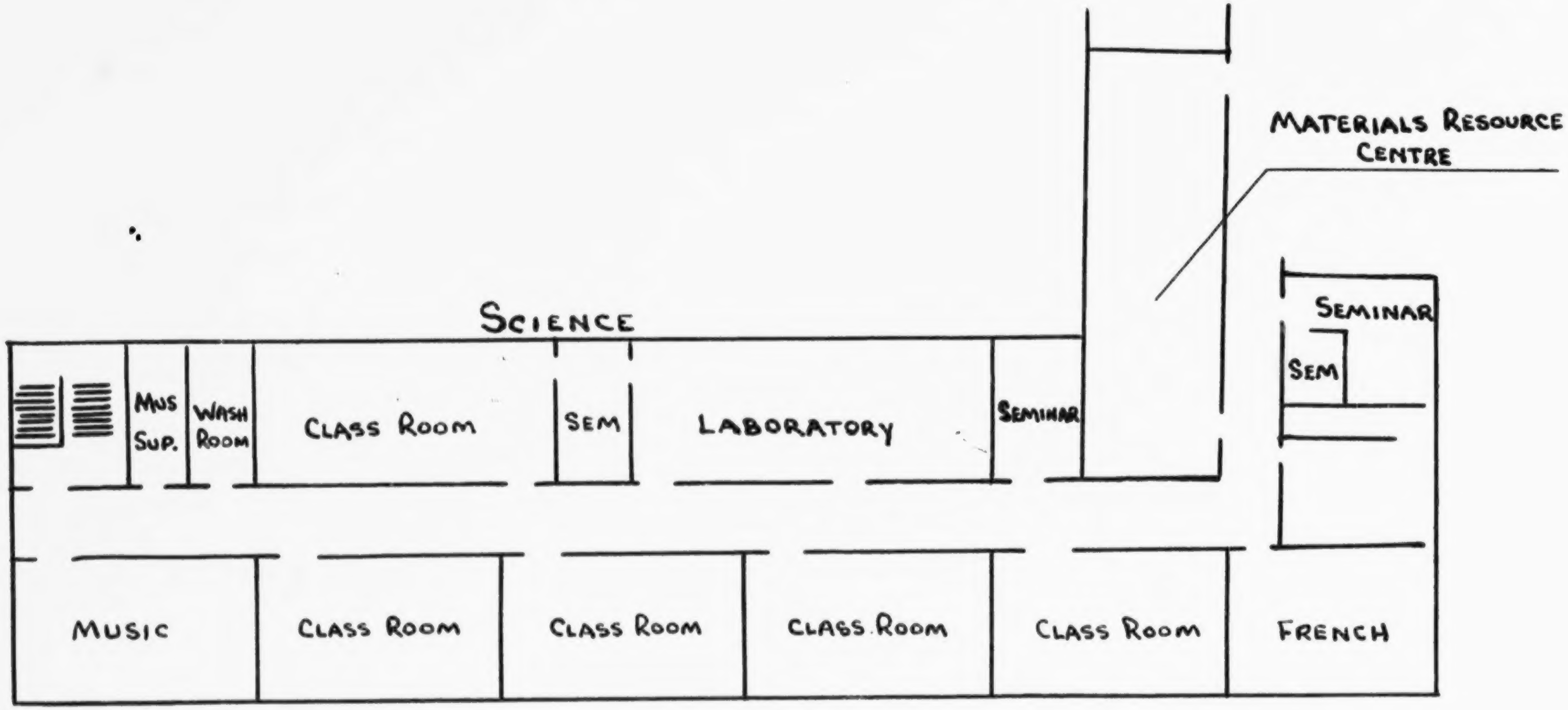
The mathematics campus is not as large and has sound proof doors that cut the main room into three smaller sections. The mathematics team at St. Michael feel the need for quieter sections for their small groups.

The science campus has four areas: lecture room, seminar and preparation room, seminar study areas and laboratory area. Ninety students and three teachers are accommodated in this campus with comfort.

Support rooms and teacher offices remain the same as in the original report.

L. W. Bunyan

May, 1966.



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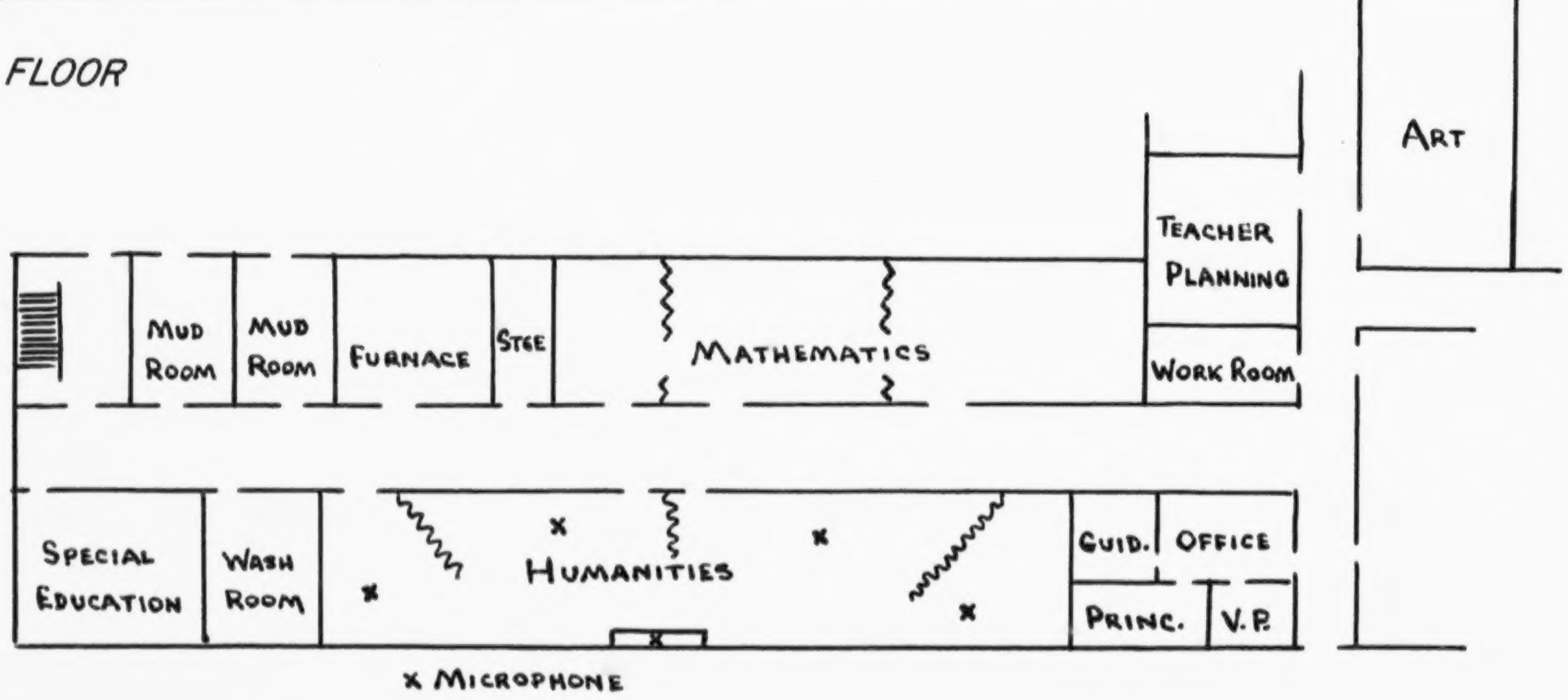

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